Special Conditions

Permit Numbers 146425 and PSDTX1518

1. This permit covers only those sources of emissions listed in the attached table entitled "Emission Sources - Maximum Allowable Emission Rates" (MAERT), and those sources are limited to the emission limits and other conditions specified in that table.

The names of chemical species referred to in these Special Conditions may be abbreviated as indicated in the attached MAERT.

Definitions

2. Terms used in this permit shall have the following meanings:

A. *Standard conditions* has the meaning assigned to it at 30 TAC § 101.1(99).

B. *Pyrolysis furnace* means a process heater subject to Special Condition 1 that produces hydrocarbon products from the endothermic cracking of feedstocks such as ethane, propane, butane, and naphtha using combustion to provide indirect heating for the cracking process.

C. *Boiler* means any combustion equipment other than a pyrolysis furnace which is subject to Special Condition 1 and is used to produce steam or to heat water.

D. *Combustion unit* means a boiler or pyrolysis furnace.

E. The following definitions apply to pyrolysis furnaces.

(1) *Non-routine operation* means decoking, hot steam standby, feed in, feed out, startup or shutdown.

(2) *Routine operation* means any period of operation other than non-routine operation.

(3) *Startup* means the period beginning when fuel is first introduced to the furnace, during either initial startup or following a shutdown; and ending when the SCR catalyst bed reaches its design operating temperature.

(4) *Shutdown* means the period beginning when the SCR catalyst bed drops below its design operating temperature and ending when all fuel is removed from the furnace.

(5) *Decoking* means the period beginning when air is introduced to the furnace cracking coils for the purpose of decoking, and ending when decoking air is removed.

(6) *Feed in* means the period beginning when hydrocarbon feed is first introduced to the furnace, following decoking, hot steam standby, or startup, and ending when the furnace reaches 70% of its design firing rate.

(7) *Feed out* means the period beginning when the furnace drops below 70% of its design firing rate and remains below that level; and ending when hydrocarbon feed is isolated from the furnace.

(8) *Hot steam standby* means operations occurring when the furnace is firing at or below 50% of its design firing rate and no hydrocarbon feed is being charged to the furnace, and the furnace is not in start-up or shut-down.

F. The following definitions apply to boilers.

(1) *Non-routine operation* means startup, shutdown, or low firing.

(2) *Startup* and *shutdown* have the meanings specified in 40 CFR § 63.7575.

(3) *Low firing* means:

(a) With respect to an emission limitation for NO_X, operation of a boiler at a firing rate that is no greater than the lesser of:

i. 30% of the maximum rated heat duty for the boiler; or

ii. The firing rate at which the flue gas temperature is at the minimum design operating temperature of the SCR catalyst bed.

(b) With respect to any other requirement of the permit, operation of a boiler at a firing rate of no greater than 30% of the maximum rated heat duty of the boiler.

G. *Flare Gas Recovery Unit* means a system of one or more compressors, piping and the associated water seal, rupture disk or similar device used to divert gas from the flare and direct the gas to the fuel gas system.

H. The following engineering abbreviations shall have their customary meanings, reproduced as follows:

(1) HHV: Higher Heating Value

(2) LHV: Lower Heating Value, or Net Heating Value

(3) MMBtu: Million British Thermal Units

(4) ppbw: Parts per billion by weight

(5) ppmv: Parts per million by volume

(6) ppmvd: Parts per million by volume, dry basis

(7) ppmw: Parts per million by weight

(8) dscf: Dry standard cubic feet

(9) gr: Grains

(10) MMlb: million pounds

(11) gpm: Gallons per minute

(12) µmho/cm: micromho per centimeter

(13) mg/L: milligram per liter

(14) cfm: cubic feet per minute

I. Other abbreviations shall have the following meanings:

(1) CEMS: continuous emissions monitoring system

(2) SCR: selective catalytic reduction

(3) CAS: carbon adsorption system

(4) EPN: emission point number

(5) TDS: total dissolved solids

(6) CFR: Code of Federal Regulations

(7) IFR: Internal Floating Roof Tank

(8) VFT: Vertical Fixed Roof Tank

(9) HFT: Horizontal Fixed Roof Tank

(10) TAC: Texas Administrative Code

(11) CFR: Code of Federal Regulations

(12) FR: *Federal Register*

(13) EPA: U.S. Environmental Protection Agency

(14) API: American Petroleum Institute

(15) HAP: Hazardous Air Pollutants listed in § 112(b) of the Federal Clean Air Act, as modified in 40 CFR Part 63, Subpart C

(16) TPDES: Texas Pollutant Discharge Elimination System

J. The following definitions apply to closed vent systems and control devices.

(1) *Shared vent system* means a closed vent system which is designed and operated to collect air contaminant vapors and route the collected vapors to one or more of the following control devices or recovery systems:

(a) Either of the shared thermal oxidizers (EPNs UFF01A or UFF01B), operated as specified in Special Condition 46;

(b) The shared elevated flare (EPN UFFLARE02), operated as specified in Special Condition 45;

(c) The multi-point ground flare (EPN UFFLARE01), operated as specified in Special Condition 44; or

(d) The Flare Gas Recovery Unit.

(2) *Glycol vent system* means a closed vent system which is designed and operated to collect air contaminant vapors and route the collected vapors to one or more of the following control devices:

(a) The MEG thermal oxidizer (EPN GBX02), operated as specified in Special Condition 46; or

(b) The MEG elevated flare (EPN GFFLARE01), operated as specified in Special Condition 45.

K. *Shakedown period* means:

(1) With respect to any emission limitation applying on a rolling 12-month basis, the 12-month period beginning with the initial start-up of the source of emissions subject to such emission limitation; and

(2) With respect to any other emission limitation, the period beginning with the initial start-up of the source subject to the emission limitation, and ending either:

(a) 180 days following start-up of the source; or

(b) Upon completion of stack sampling required under Special Condition 62 for the source and pollutant to which the emission limitation applies;

Whichever is sooner.

3. Emission or operating limits identified in Special Conditions 21 and 23 of this permit, which are expressed using units of heat, are based on the higher heating value of the fuel input to a combustion unit.

4. Except where otherwise indicated, emission limits expressed in terms of concentration of a pollutant in the exhaust of a combustion unit or control device shall be evaluated on a dry basis, corrected to 3% oxygen.

Federal Applicability

5. These facilities shall comply with all applicable requirements of the U.S. Environmental Protection Agency (EPA) regulations on Standards of Performance for New Stationary Sources promulgated in Title 40 Code of Federal Regulations Part 60 (40 CFR Part 60):

A. Subpart A, General Provisions.

B. Subpart Db, Industrial-Commercial-Institutional Steam Generating Units.

C. Subpart Kb, Volatile Organic Liquid Storage Vessels.

D. Subpart VVa, Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry (SOCMI).

E. Subpart DDD, Polymer Manufacturing Industry.

F. Subpart NNN, SOCMI Distillation Operations.

G. Subpart RRR, SOCMI Reactor Processes.

H. Subpart IIII, Stationary Compression Ignition Internal Combustion Engines.

6. These facilities shall comply with all applicable requirements of the EPA regulations on National Emission Standards for Hazardous Air Pollutants in 40 CFR Part 61:

A. Subpart A, General Provisions.

B. Subpart J, Equipment Leaks of Benzene.

C. Subpart FF, Benzene Waste Operations.

7. These facilities shall comply with all applicable requirements of the U.S. Environmental Protection Agency (EPA) regulations on National Emission Standards for Hazardous Air Pollutants for Source Categories in 40 CFR Part 63:

A. Subpart A, General Provisions.

B. Subpart F, SOCMI.

C. Subpart G, SOCMI Process Vents, Storage Vessels, Transfer Operations, and Wastewater.

D. Subpart H, Equipment Leaks.

E. Subpart UU, Equipment Leaks— Control Level 2 Standards.

F. Subpart SS, Closed Vent Systems, Control Devices, Recovery Devices and Routing to a Fuel Gas System or a Process.

G. Subpart WW, Storage Vessels— Control Level 2 Standards.

H. Subpart XX, Ethylene Manufacturing Process Units: Heat Exchange Systems and Waste Operations

I. Subpart YY, Generic Maximum Achievable Control Technology Standards.

J. Subpart EEEE, Organic Liquids Distribution (Non-Gasoline).

K. Subpart FFFF, Miscellaneous Organic Chemical Manufacturing.

L. Subpart ZZZZ, Stationary Reciprocating Internal Combustion Engines.

M. Subpart DDDDD, Industrial, Commercial, and Institutional Boilers and Process Heaters.

Process Vents

8. Non-fugitive emissions of gases containing volatile organic compounds (VOC) at a concentration of greater than 1 percent from relief valves, safety valves, or rupture discs are not authorized by this permit unless authorized on the MAERT. With the exception of devices which relieve to the atmosphere only in the event of a fire, any releases directly to atmosphere from relief valves, safety valves, or rupture discs of gases containing VOC at a concentration greater than 1 weight percent are not consistent with good practice for minimizing emissions.

9. All process vents from vacuum producing equipment in the Glycols plant shall be controlled using the MEG l Thermal Oxidizer (EPN GBX02) or the MEG Elevated Flare (GFFLARE01). This requirement does not apply, and the vents may be directed to the atmosphere, in case both of the following criteria are satisfied:

A. Atmospheric venting occurs during planned start-up or shut-down of the Glycols plant.

B. The MEG Thermal Oxidizer (EPN GBX02) is out of service for planned maintenance.

Records of thermal oxidizer downtime shall be retained, and the permit holder shall make all reasonable efforts to limit the duration of maintenance outages which occur during plant operations.

10. Prior to any uncontrolled venting from the Olefins Regeneration Vent (EPN O-REGEN) and the PE Regeneration Vent (EPN PE-REGEN), the associated vent streams shall be directed to the shared vent system for control to the maximum extent practicable.

11. All emissions from filling or depressurization of the Glycol Moderator Drum shall be directed to a CAS (EPN GAD09A-D) satisfying the requirements of Special Condition 47.

Polyethylene Residual VOC Emissions

12. Total VOC emitted to the atmosphere after the purge column through product loadout from each polyethylene unit shall not exceed 50 pounds per million pounds of polyethylene pellets produced.

13. Ongoing compliance with VOC emission limits specified in Special Condition 12 shall be determined by calculation using monthly production rates and monthly average sampling and testing of the polyethylene for residual VOC.

A. Samples of resin shall be collected at the following locations: (“point A”) immediately after the purge column, and (“point B”) at the final product loadout station.

B. Sampling shall be performed for each product type produced during a calendar month. An exemption from sampling may be claimed for a particular product type if both of the following conditions are satisfied:

(1) The product is produced for 72 hours or less during the month; and

(2) Sampling has been conducted at the plant for the same product during the preceding 60 months, and documentation of the sampling results has been retained. The most recent such results shall be used in the calculations specified in Special Condition 14.

C. Prior to the initial start-up of any polyethylene unit, the permit holder shall obtain a permit alteration to attach a VOC head space sampling protocol to the permit Special Conditions. The sampling protocol shall ensure measurement of the total residual VOC content of the polymer being sampled.

14. Polymer production rates, monitoring records, and emission calculations shall be maintained at the plant site:

A. Production and sampling records shall include (but are not limited to):

(1) Day and time of sample.

(2) Actual plant production rate at the time of sampling and monthly production rate.

(3) Product number, resin type and melt index.

(4) Sampled residual VOC concentrations for each product type at each sampling point.

B. Polymer handling emissions for a product type shall be calculated as follows:

$$E_{Res} = C_A - C_B$$

Where:

E_{Res} is the total polymer handling emission rate, expressed in units of lb VOC per MMlb polymer.

C_A is the residual VOC concentration of a representative sample of a particular polymer grade, taken at point A, expressed in units of ppmw; and

C_B is the residual VOC concentration of a representative sample of the same polymer grade, taken at point B, expressed in units of ppmw.

C. Monthly average VOC emissions for the polyethylene unit shall be calculated as follows:

Where:

$E_{Res,Avg}$ is the monthly average polymer handling emission rate, expressed in units of lb VOC per MMlb polymer.

n is the total number of product types produced during the month.

w_i is the mass fraction of total production at the unit consisting of product type i

E_{Res} is the residual VOC concentration calculated following paragraph B of this Special Condition.

Solids Handling

15. Particulate matter outlet grain loading shall not exceed 0.005 gr/dscf of air from any vent. There shall be no visible emissions exceeding 30 seconds in any six-minute period as determined using EPA Test Method 22.

The vents identified in Special Condition 17 shall not operate unless any control devices and associated equipment are maintained in good working order and operating. All vents identified in

Special Condition 17 shall be inspected for visible emissions once per day and a spare parts filter inventory will be maintained on site. Records shall be maintained of all inspections and maintenance performed.

16. The following requirements apply to the particulate control devices identified in Special Condition 17.

A. The differential pressure across each particulate control device shall be continuously monitored and be recorded at least once an hour.

B. Prior to the start of operation of any polyethylene unit, the permit holder shall obtain a permit alteration which specifies the parametric monitoring requirements for each control device, using pressure drop across the device as a monitoring parameter. An alternate monitoring parameter may be specified for a particular control device if a pressure monitoring device is not incorporated into the design of such control device. The alternate monitoring parameter shall ensure that necessary preventative maintenance on the control device is completed in a timely manner.

C. Each monitoring device shall be calibrated at a frequency in accordance with the manufacturer's specifications or at least annually, whichever is more frequent, and shall be accurate to within 0.5 inches water gauge pressure or 0.5 percent of span.

D. Quality assured (or valid) data must be generated when the polyethylene unit is operating except during the performance of a daily zero check. Loss of valid data due to periods of monitor breakdown, out-of-control operation (producing inaccurate data), repair, maintenance, or calibration may be exempted provided it does not exceed 5 percent of the time (in hours) that the polyethylene unit operated over the previous rolling 12-month period. The measurements missed shall be estimated using engineering judgment and the methods used recorded.

17. The following sources of particulate emissions at the polyethylene units are covered by the permit.

A. Plant "E" vents

Source Name	Vent type	EPN
EPE granules feed bin dust collector	Bag House	ELDC01
EPE granules hopper vent dust collector	Bag House	EDFAN01
EPE feed bin exit dust collector	Bag House	E_LLFB_001
EPE seed bed bin dust collector	Bag House	EDDC04
EPE extruder feed conveyor dust collector	Bag House	ELDC03
EPE granule filter receiver (seed bed filter)	Bag House	E_DLSB_001
EPE pellet silo vents	Bag House	EPFAN01, E_PLDS_007, E_PLDS_008, E_PLDS_009, E_PLDS_010
EPE pellet dryer vents	Uncontrolled	EMFAN01, EMFAN02
EPE film test extruder filter receiver	Bag House	E_MPPX_001
Dry additive weigh feed hopper extraction vent	Sock Filter	ELFAN04

Additive drying hopper dust collector	Bag House	ELDC06
Vacuum blower vents for additive transfer	Bag House	ELB01, ELB03, ELB05, ELFAN01
EPE Catalyst handling cylinder vent filters	Sintered Metal Filter	EBFIL01, E_BCTS_002, E_BCTS_003
EPE Catalyst hold tank filters	Sintered Metal Filter	ECFIL04, ECFIL05, ECFIL06
EPE pellet surge bin dust collector	Bag House	EMDC01
EPE finishing building vent	Bag House	E_LFBF_001

B. Plant “C” vents

Source Name	Vent type	EPN
CPE granules feed bin dust collector	Bag House	CLDC01
CPE granules hopper vent dust collector	Bag House	CDFAN01
CPE feed bin exit dust collector	Bag House	C_LLFB_001
CPE seed bed bin dust collector	Bag House	CDDC04
CPE extruder feed conveyor dust collector	Bag House	CLDC03
CPE granule filter receiver (seed bed filter)	Bag House	C_DLSB_001
CPE pellet silo vents	Bag House	CPFAN01, C_PLDS_007, C_PLDS_008, C_PLDS_009, C_PLDS_010
CPE pellet dryer vents	Uncontrolled	CMFAN01, CMFAN02
Film test extruder filter receiver	Bag House	C_MPPX_001
CPE dry additive weigh feeder hopper extraction vent	Sock Filter	CLFAN04
CPE additive drying hopper dust collector	Bag House	CLDC06
Vacuum blower vents for additive transfer	Bag House	ELB02, ELB04, CLB03, C_LADD_007
CPE catalyst handling cylinder vent filters	Sintered Metal Filter	CBFIL01, C_BCTS_002, C_BCTS_003
CPE catalyst hold tank filters	Sintered Metal Filter	CCFIL04, CCFIL05, CCFIL06
CPE pellet surge bin vent	Bag House	CMDC01
CPE finishing building vent	Bag House	C_LFBF_001

Combustion Devices

18. Opacity of emissions from each combustion unit and thermal oxidizer authorized by this permit shall not exceed 5 percent averaged over any six minute period.

Opacity shall be determined by the U.S. Environmental Protection Agency (EPA) Test Method 9 during the initial compliance testing and at least once per year thereafter. In lieu of performing a required opacity test, the permit holder may verify that there are no visible emissions as determined by EPA Test Method 22. For opacity or visible emissions determinations other than those required

during the initial compliance testing, determination of opacity or visible emissions for each pyrolysis furnace shall take place during decoking.

19. Reserved.

20. Combustion units are subject to the following requirements for fuel sulfur:

A. Pyrolysis furnaces shall be fired with natural gas, olefins unit tail gas, and/or ethane.

B. Boilers shall be fired with natural gas, olefins unit tail gas, ethane, and/or flare gas recovery unit vent gas with a combined total sulfur content not to exceed 3.7 gr per 100 dscf on a rolling 365-day average.

C. Natural gas, olefins unit tail gas, and ethane shall have a total sulfur content not to exceed 5 gr per 100 dscf on a 1-hr average and 0.5 gr per 100 dscf on a rolling 12-month average.

D. Compliance with the requirements of paragraph C of this Special Condition shall be verified through sampling of fuel gas at least semi-annually. Fuel gas streams identified in paragraph C may be sampled individually, or a representative sample of blended fuel gas may be taken from the fuel gas header.

For natural gas and commercial ethane, tariff sheets documenting the sulfur content of the fuel may be retained in lieu of performing sampling.

21. Emissions Standards for Pyrolysis Furnaces.

A. Except where provided otherwise in Paragraph D of this Special Condition, emissions of NO_X, CO, and NH_3 from each pyrolysis furnace shall not exceed the following values. Compliance with the NO_X emissions limits shall be achieved through the use of an SCR system.

(1) Short-term average limits:

Pollutant	Emission Limit	Averaging Period
NO_X	0.015 lb/MMBtu	1-hr
CO	50 ppmvd	1-hr
NH_3	10 ppmvd	24-hr

(2) Long-term average limits:

Pollutant	Emission Limit	Averaging Period
NO_X	0.010 lb/MMBtu	Annual

B. Compliance with the NO_X and CO emission limits of paragraph A shall be demonstrated through use of CEMS.

C. Compliance with the NH_3 emission limits of paragraph A shall be continuously demonstrated using one of the following options.

(1) Install an NH_3 CEMS satisfying the requirements of Special Condition 66.

(2) In addition to the NO_X CEMS required under paragraph B of this Special Condition, install a second NO_X CEMS upstream of the SCR system. Perform the measurements and calculations associated with the mass balance method specified in 30 TAC § 117.8130(1), using NO_X CEMS data to determine the NO_X concentration differential across the control device.

D. The NO_X and CO emission limits of subparagraph A(1) of this Special Condition shall not apply to a pyrolysis furnace during non-routine operation of the pyrolysis furnace, and shall not apply during the shakedown period.

22. During decoking operations, pyrolysis furnace effluent shall be captured and conveyed to a cyclone system, and the gaseous exhaust stream from the decoking system shall be directed to the flame zone of a pyrolysis furnace.

23. Emissions Standards for Boilers.

A. Except where provided otherwise in Paragraph C of this Special Condition, emissions of NO_X CO, and NH_3 from each boiler shall not exceed the following values.

(1) Short-term average limits:

Pollutant	Emission Limit	Averaging Period
NO_X	0.015 lb/MMBtu	1-hr
CO	100 ppmvd	1-hr
NH_3	10 ppmvd	24-hr

(2) Long-term average limits:

Pollutant	Emission Limit	Averaging Period
NO_X	0.010 lb/MMBtu	Annual

B. Compliance with the NO_X and CO emission limits of paragraph A shall be demonstrated through use of CEMS.

C. Compliance with the NH_3 emission limits of paragraph A shall be continuously demonstrated using one of the following options.

(1) Install an NH_3 CEMS satisfying the requirements of Special Condition 66.

(2) In addition to the NO_X CEMS required under paragraph B of this Special Condition, install a second NO_X CEMS upstream of the SCR system. Perform the measurements and calculations associated with the mass balance method specified in 30 TAC § 117.8130(1), using NO_X CEMS data to determine the NO_X concentration differential across the control device.

D. During non-routine operations for a boiler, and during the shakedown period, the requirements of subparagraph A(1) shall not apply.

Records of boiler startup, shutdown, and low firing events shall specify the time and duration of the event.

Liquids Storage and Transfer Operations

Storage Facilities

24. Storage tanks are subject to the following requirements: The control requirements specified in paragraphs A–E of this Special Condition shall not apply (1) where the VOC has an aggregate partial pressure of less than 0.50 psia at the maximum feed temperature or 95°F, whichever is greater, or (2) to storage tanks smaller than 25,000 gallons.

The control requirements specified in paragraph F of this Special Condition shall not apply to a tank which has a maximum working volume of less than 25,000 gallons and stores a liquid with an aggregate VOC partial pressure of less than 0.50 psia at 95° F.

A. The tank emissions must be controlled as specified in one of the sections below. Tanks complying with section (2) or (3) are exempt from the requirements of paragraphs B–F of this Special Condition.

(1) An internal floating deck or "roof" shall be installed. A domed external floating roof tank is equivalent to an internal floating roof tank.

The floating deck shall be of welded construction.

The floating roof shall be equipped with one of the following closure devices between the wall of the storage vessel and the edge of the floating roof:

(a) a liquid-mounted seal,

(b) two continuous seals mounted one above the other, or

(c) a mechanical shoe seal.

(2) All vents from the tank shall be captured using a closed vent system and directed to a control device as specified in Special Condition 25.

(3) The tank is a pressure vessel designed to operate without emissions to the atmosphere.

B. For any tank equipped with a floating roof, the permit holder shall perform the visual inspections and any seal gap measurements specified in 40 CFR § 60.113b Testing and Procedures (as amended at 54 FR 32973, Aug. 11, 1989) to verify fitting and seal integrity. Records shall be maintained of the dates inspection was performed, any measurements made, results of inspections and measurements made (including raw data), and actions taken to correct any deficiencies noted.

C. The floating roof design shall incorporate sufficient flotation to conform to the requirements of API Code 650 dated November 1, 1998 except that an internal floating cover need not be designed to meet rainfall support requirements and the materials of construction may be steel or other materials.

D. The tanks shall be designed to completely drain its entire contents to a sump in a manner that limits the volume of free-standing liquid in the tank or the sump as follows:

NPS (in.)	V_U (gal.)
2	9
3	14
4	32
6	75

Where: NPS is the nominal piping size of the sump pipe; and

V_U is the maximum volume of free-standing liquid in the tank or sump.

E. Tanks shall be constructed or equipped with a connection to a vapor recovery system that routes vapors from the vapor space under the landed roof to a control device.

F. Except for labels, logos, etc. not to exceed 15 percent of the tank total surface area, uninsulated tank exterior surfaces exposed to the sun shall be white or unpainted aluminum. Storage tanks must be equipped with permanent submerged fill pipes.

G. The permit holder shall maintain an emissions record which includes calculated emissions of VOC from all storage tanks during the previous calendar month and the past consecutive 12 month period. The record shall include tank identification number, control method used, tank capacity in gallons, name of the material stored, VOC molecular weight, VOC monthly average temperature in degrees Fahrenheit, VOC vapor pressure at the monthly average material temperature in psia, VOC throughput for the previous month and year-to-date. Records of VOC monthly average temperature are not required to be kept for unheated tanks which receive liquids that are at or below ambient temperatures.

25. Emissions from tanks shall be calculated using the methods that were used to determine the MAERT limits in the permit application (Form PI-1 dated April 19, 2017, as revised). Sample calculations from the application shall be retained at the plant site and made available upon request to authorized representatives of TCEQ. The following control requirements apply to the storage tanks specified below.

A. The light oil tank (FIN UTTK107T) shall be directed to the shared vent system for control.

B. The catalyst tanks (EPNs CPETANK_4, CCD81, CPETANK_6) shall be equipped with a blanketing and vapor recovery system which creates an inert atmosphere inside of the storage tank, and directs recovered vapors to a control device covered by the permit, or to a diffusion chamber designed to absorb catalyst vapors in a mineral oil solution.

C. The space between the fixed roof and the floating roof of the sulfidic caustic tanks (EPNs UTTK103T, UTTK104T) shall have an H_2S concentration not to exceed 24 ppmv as determined through annual monitoring using Draeger tubes or equivalent.

26. Tank service and filling rates shall be limited as follows.

Tank EPN	Type	Service	Maximum total working volume for tank group (gal)
UTTK101T, UTTK102T	IFR	Pyrolysis Gasoline	256693
UTTK103T, UTTK104T	IFR	Spent Sulfidic Caustic	35355
UTTK107T	VFT	Light Pyrolysis Oil	36717
U_NH3WW	VFT	Ammonia Wastewater	32403
ELD01, ELD02, EM_ETANK_3, EM_ETANK_4	VFT	PE additive	2937
CPETANK_1, CPETANK_2, CPETANK_3	VFT	Seal Oil	2062
CPETANK_4	VFT	Catalyst Solution	164
CCD81, CPETANK_6	HFT	Catalyst Solution	1316
GETK02A GETK02B, GTK_502C	VFT	Monoethylene Glycol	5537096
GDTK01, GDD08, GDD09	VFT	Catalyst Solution	477384
SCTOTE-GLY	VFT	Catalyst Solution	6234
GETK01	VFT	Crude Glycols	2740937
ZTTK02, ZTTK08T	VFT	Heavy Glycols	610789
ZTTK03, GED04	VFT	Crude Glycols	276350
ZTTK05, ZTTK04	IFR	1-Hexene	1691936
ZTTK06A, ZTTK06B	VFT	Pyrolysis Fuel Oil	149172
ZTTK04, ZWTK17T	IFR	Olefins Slop Oil	943959
ZWTK06, ZWTK07	IFR	Wastewater Slop Oil	415464
ZMTK02	HFT	Diesel	14687
UKDGEN01TK, UKDGEN02TK, ADMINGENTK, TKUGEN4, TKUGEN5, ZFTK02C, GUDGEN01TK, UTTK100T, ZFTK02B	HFT	Diesel	39809
ZMTK01	HFT	Motor Gasoline	14687
ZFTK04	HFT	Motor Gasoline	1175

27. The following requirements apply to sumps covered by the permit (EPNs ZWTK19, ZWTK20, ZTTK10, ZFTK05, FZTK01, OTANK_S2, OTANK_S3, OTANK_S4, OTANK_S5, GFTK01, EM_ETANK_S, CPETANK_S, UTANK_S).

A. Any standing liquid with an aggregate VOC partial pressure of 0.50 psia or greater at 95°F shall be pumped down to the maximum extent practicable and removed to a closed vessel or treatment system. Pumping down of the sump shall commence within one hour of liquid entering the sump, and shall be completed as soon as practicable.

Tanker Truck and Railcar Loading Operations

28. All lines and connectors shall be visually inspected for any defects prior to hookup. Lines and connectors that are visibly damaged shall be removed from service. Operations shall cease immediately upon detection of any liquid leaking from the lines or connections.

29. The following requirements apply to any tanker truck or railcar to be loaded with a liquid with a VOC vapor pressure of 0.50 psia or greater at 95° F.

A. Each tank truck shall pass vapor-tight testing every 12 months using the methods described in 40 CFR Part 60, Subpart XX. The permit holder shall not allow a tank truck to be filled unless it has passed a leak-tight test within the past year as evidenced by a certificate which shows the date the tank truck last passed the leak-tight test required by this condition and the identification number of the tank truck.

B. The permit holder shall not allow a railcar to be filled unless it has a current certification in accordance with U.S. Department of Transportation (DOT) pressure test requirements of 49 CFR §173.31.

30. The loading of any liquid with a VOC vapor pressure of 0.50 psia or greater at 95° F shall be controlled through a closed vent system and a control device satisfying the applicable requirements of this permit. Truck Loading operations are limited to the liquids and rates specified below.

Product	Maximum Fill Rate (gal/hr)	Required Controls
Pyrolysis Gasoline, Heavy Fuel Oil, Slop Oil	24,000	Shared Vent System
Monoethylene Glycol, Heavy Glycols (henceforth “Glycols”)	110,000	None
Waste Solvent	12,000	None
Methanol (MSS)	12,000	Control device listed in Special Condition 57.

Railcar loading of Glycols shall be limited to a maximum fill rate of 110,000 gal/hr. The combined fill rate for simultaneous tanker truck and railcar loading of Glycols shall not exceed 110,000 gal/hr.

31. Prior to venting any transfer line/hose to the atmosphere, the following procedure shall be performed following transfer of liquids with a VOC vapor pressure of 0.50 psia or greater at 95° F.

Upon completion of loading, the loading line/hose shall be isolated at the connection to the transfer rack piping. Pressurized nitrogen shall be connected to one end of the line/hose to purge liquids and vapors in the loading line/hose into the tanker truck/railcar per the site operating procedure.

The tanker truck/railcar shall remain connected to the loading rack closed vent system and control shall be maintained as required in Special Condition 30 during purging of the transfer line/hose.

32. The permit holder shall maintain and update a monthly emissions record which includes calculated emissions of VOC from all loading operations over the previous rolling 12-month period. The record shall include the loading spot, control method used, quantity loaded in gallons, name of the liquid loaded, vapor molecular weight, liquid temperature in degrees Fahrenheit, liquid vapor pressure at the liquid temperature in psia, liquid throughput for the previous month and rolling 12 months to date. Records of VOC temperature are not required to be kept for liquids loaded from unheated tanks which receive liquids at or below ambient temperatures. Emissions shall be calculated using the TCEQ publication titled "Technical Guidance Package for Chemical Sources - Loading Operations."

Equipment Leaks

33. Piping, Valves, Connectors, Pumps, Agitators, and Compressors – 28VHP

Except as may be provided for in the Special Conditions of this permit, the following requirements apply to the above-referenced equipment:

A. The requirements of paragraphs F and G shall not apply (1) where the VOC has an aggregate partial pressure or vapor pressure of less than 0.044 pounds per square inch, absolute (psia) at 68°F or (2) operating pressure is at least 5 kilopascals (0.725 psi) below ambient pressure. Equipment excluded from this condition shall be identified in a list or by one of the methods described below to be made readily available upon request.

The exempted components may be identified by one or more of the following methods:

(1) piping and instrumentation diagram (PID);

(2) a written or electronic database or electronic file;

(3) color coding;

(4) a form of weatherproof identification; or

(5) designation of exempted process unit boundaries.

B. Construction of new and reworked piping, valves, pump systems, and compressor systems shall conform to applicable American National Standards Institute (ANSI), American Petroleum Institute (API), American Society of Mechanical Engineers (ASME), or equivalent codes.

C. New and reworked underground process pipelines shall contain no buried valves such that fugitive emission monitoring is rendered impractical. New and reworked buried connectors shall be welded.

D. To the extent that good engineering practice will permit, new and reworked valves and piping connections shall be so located to be reasonably accessible for leak-checking during plant operation. Difficult-to-monitor and unsafe-to-monitor valves, as defined by 30 TAC Chapter 115, shall be identified in a list to be made readily available upon request. The difficult-to-monitor and unsafe-to-monitor valves may be identified by one or more of the methods described in Paragraph A above. If an unsafe to monitor component is not considered safe to monitor within a calendar year, then it shall be monitored as soon as possible during safe to monitor times. A difficult to monitor component for which quarterly monitoring is specified may instead be monitored annually.

E. New and reworked piping connections shall be welded or flanged. Screwed connections are permissible only on piping smaller than two-inch diameter. Gas or hydraulic testing of the new and reworked piping connections at no less than operating pressure shall be performed prior to returning the components to service or they shall be monitored for leaks using an approved gas analyzer within 15 days of the components being returned to service. Adjustments shall be made as necessary to obtain leak-free performance. Connectors shall be inspected by visual, audible, and/or olfactory means at least weekly by operating personnel walk-through.

Each open-ended valve or line shall be equipped with an appropriately sized cap, blind flange, plug, or a second valve to seal the line. Except during sampling, both valves shall be closed. If the isolation of equipment for hot work or the removal of a component for repair or replacement results in an open ended line or valve, it is exempt from the requirement to install a cap, blind flange, plug, or second valve for 72 hours. If the repair or replacement is not completed within 72 hours, the permit holder must complete either of the following actions within that time period;

(1) a cap, blind flange, plug, or second valve must be installed on the line or valve;

or

(2) the open-ended valve or line shall be monitored once for leaks above background for a plant or unit turnaround lasting up to 45 days with an approved gas analyzer and the results recorded. For all other situations, the open-ended valve or line shall be monitored once within the 72 hour period following the creation of the open ended line and monthly thereafter with an approved gas analyzer and the results recorded. For turnarounds and all other situations, leaks are indicated by readings of 500 ppmv and must be repaired within 24 hours or a cap, blind flange, plug, or second valve must be installed on the line or valve.

F. Accessible valves shall be monitored by leak-checking for fugitive emissions at least quarterly using an approved gas analyzer. Sealless/leakless valves (including, but not limited to, welded bonnet bellows and diaphragm valves) and relief valves equipped with a rupture disc upstream or venting to a control device are not required to be monitored. If a relief valve is equipped with rupture disc, a pressure-sensing device shall be installed between the relief valve and rupture disc to monitor disc integrity.

A check of the reading of the pressure-sensing device to verify disc integrity shall be performed at least quarterly and recorded in the unit log or equivalent. Pressure-sensing devices that are continuously monitored with alarms are exempt from recordkeeping requirements specified in this paragraph. All leaking discs shall be replaced at the earliest opportunity but no later than the next process shutdown.

The gas analyzer shall conform to requirements listed in Method 21 of 40 CFR Part 60, Appendix A. The gas analyzer shall be calibrated with methane. In addition, the response factor of the instrument for a specific VOC of interest shall be determined and meet the requirements of Section 8 of Method 21. If a mixture of VOCs is being monitored, the response factor shall be calculated for the average composition of the process fluid. A calculated average is not required when all of the compounds in the mixture have a response factor less than 10 using methane. If a response factor less than 10 cannot be achieved using methane, then the instrument may be calibrated with one of the VOC to be measured or any other VOC so long as the instrument has a response factor of less than 10 for each of the VOC to be measured.

Replacements for leaking components shall be re-monitored within 15 days of being placed back into VOC service.

G. Except as may be provided for in the special conditions of this permit, all pump, compressor, and agitator seals shall be monitored with an approved gas analyzer at least quarterly or be equipped with a shaft sealing system that prevents or detects emissions of VOC from the seal. Seal systems designed and operated to prevent emissions or seals equipped with automatic seal failure detection and alarm system need not be monitored. These seal systems may include (but are not limited to) dual pump seals with barrier fluid at higher pressure than process pressure, seals degassing to vent control systems kept in good working order, or seals equipped with an automatic seal failure detection and alarm system. Submerged pumps or sealless pumps (including, but not limited to, diaphragm, canned, or magnetic-driven pumps) may be used to satisfy the requirements of this condition and need not be monitored.

H. Damaged or leaking valves or connectors found to be emitting VOC in excess of 500ppmv or found by visual inspection to be leaking (e.g., dripping process fluids) shall be tagged and replaced or repaired. Damaged or leaking pump, compressor, and agitator seals found to be emitting VOC in excess of 2,000 ppmv or found by visual inspection to be leaking (e.g., dripping process fluids) shall be tagged and replaced or repaired. A first attempt to repair the leak must be made within 5 days and a record of the attempt shall be maintained.

I. A leaking component shall be repaired as soon as practicable, but no later than 15 days after the leak is found. If the repair of a component would require a unit shutdown that would create more emissions than the repair would eliminate, the repair may be delayed until the next scheduled shutdown. All leaking components which cannot be repaired until a scheduled shutdown shall be identified for such repair by tagging within 15 days of the detection of the leak. A listing of all components that qualify for delay of repair shall be maintained on a delay of repair list. The cumulative daily emissions from all components on the delay of repair list shall be estimated by multiplying by 24 the mass emission rate for each component calculated in accordance with the instructions in 30 TAC § 115.782(c)(1)(B)(i)(II). The calculations of the cumulative daily emissions from all components on the delay of repair list shall be updated within ten days of when the latest leaking component is added to the delay of repair list. When the cumulative daily emission rate of all components on the delay of repair list times the number of days until the next scheduled unit shutdown is equal to or exceeds the total emissions from a unit shut down as calculated in accordance with 30 TAC § 115.782(c)(1)(B)(i)(I), the TCEQ Regional Manager and any local programs shall be notified and may require early unit shut down or other appropriate action based on the number and severity of tagged leaks awaiting shutdown. This notification shall be made within 15 days of making this determination.

J. Records of repairs shall include date of repairs, repair results, justification for delay of repairs, and corrective actions taken for all components. Records of instrument monitoring shall indicate dates and times, test methods, and instrument readings. The instrument monitoring record shall include the time that monitoring took place for no less than 95% of the instrument readings recorded. Records of physical inspections shall be noted in the operator's log or equivalent.

K. Alternative monitoring frequency schedules of 30 TAC 115.352 - 115.359 or National Emission Standards for Organic Hazardous Air Pollutants, 40 CFR Part 63, Subpart H, may be used in lieu of Items G through H of this condition.

L. Compliance with the requirements of this condition does not assure compliance with requirements of 30 TAC Chapter 115, an applicable New Source Performance Standard (NSPS), or an applicable National Emission Standard for Hazardous Air Pollutants (NESHAPS) and does not constitute approval of alternative standards for these regulations.

34. Quarterly Monitoring of Connectors — 28CNTQ

In addition to the weekly physical inspection required by paragraph E of Special Condition 33, all accessible connectors in gas/vapor or light liquid service shall be monitored quarterly with an approved gas analyzer in accordance with paragraphs F–J of Special Condition 33.

A. Allowance for reduced monitoring frequencies.

(1) The frequency of monitoring may be reduced from quarterly to semiannually if the percent of connectors leaking for two consecutive quarterly monitoring periods is less than 0.5 percent.

(2) The frequency of monitoring may be reduced from semiannually to annually if the percent of connectors leaking for two consecutive semiannual monitoring periods is less than 0.5 percent.

B. If the percent of connectors leaking for any semiannual or annual monitoring period is 0.5 percent or greater, the facility shall revert to quarterly monitoring until the facility again qualifies for the alternative monitoring schedules previously outlined in this paragraph. The percent of connectors leaking used in paragraph A shall be determined using the following formula:

$$(Cl + Cs) \times 100/Ct = Cp$$

Where:

Cl = the number of connectors found leaking by the end of the monitoring period, either by Method 21 or sight, sound, and smell.

Cs = the number of connectors for which repair has been delayed and are listed on the facility shutdown log.

Ct = the total number of connectors in the facility subject to the monitoring requirements, as of the last day of the monitoring period, not including nonaccessible and unsafe-to-monitor connectors.

Cp = the percentage of leaking connectors for the monitoring period.

.

35. SCR System Piping, Valves, Pumps, and Compressors in contact with NH_3– 28AVO

Except as may be provided for in the Special Conditions of this permit, the following requirements apply to the above-referenced equipment:

A. Audio, olfactory, and visual checks for leaks within the operating area shall be made once per shift.

B. Immediately, but no later than one hour upon detection of a leak, plant personnel shall take at least one of the following actions:

(1) Isolate the leak.

(2) Commence repair or replacement of the leaking component.

(3) Use a leak collection/containment system to prevent the leak until repair or replacement can be made if immediate repair is not possible.

Date and time of each inspection shall be noted in the operator's log or equivalent. Records shall be maintained at the plant site of all repairs and replacements made due to leaks. These records

shall be made available to representatives of the Texas Commission on Environmental Quality (TCEQ) upon request.

Heat Exchange Systems

36. The cooling tower (EPN UCCT01) and associated heat exchange systems shall be operated and monitored in accordance with the following:

A. The actual cooling water circulation rate shall be measured at least hourly. Measurements shall be reduced to an hourly average and recorded for use in emission calculations. If multiple sampling points are used, then the actual cooling water circulation rate associated with each sampling point shall be determined and recorded. The circulation rate associated with a particular sampling point can be estimated using engineering judgment. The method used to estimate flow associated with a sampling point shall be documented.

B. The VOC associated with cooling tower (EPN UCCT01) water shall be monitored with an air stripping system meeting the requirements of the TCEQ Sampling Procedures Manual, Appendix P (dated January 2003 or a later edition), a continuous on-line monitor conforming to the requirements of 30 TAC § 115.764(a)(6), or an approved equivalent sampling method.

The results of the monitoring, cooling water flow rate and maintenance activities on the cooling water system shall be recorded. The monitoring results and cooling water hourly mass flow rate shall be used to determine cooling tower hourly VOC emissions. The rolling 12-month cooling water emission rate shall be recorded on a monthly basis and be determined by summing the VOC emissions between VOC monitoring instances over the rolling 12-month period. The emissions between VOC monitoring instances shall be obtained by multiplying the total cooling water mass flow between cooling water monitoring instances by the higher of the two VOC monitored results.

C. The required frequency of sampling specified in paragraph B shall be at least once per week per sampling point. If no leak is identified during 26 consecutive weeks of weekly monitoring, the frequency of sampling may be reduced to monthly, and shall revert to weekly upon detection of a leak.

D. Equipment shall be maintained so as to minimize VOC emissions into the cooling water. A leak (faulty equipment) is indicated by:

(1) Cooling tower water VOC concentrations above 80 ppbw at any sampling point; or

(2) For any sampling point covering cooling tower water associated with the Olefins Plant, a cooling tower water VOC concentration C (measured in units of ppbw) at such sampling point, such that:

$500 \times 10^{-9} \times CR \times C \geq 6.73$

Where: CR is the actual cooling water circulation rate in units of gpm, measured as required under paragraph A of this Special Condition.

Use of list of HAP at 40 CFR Part 63, Subpart XX in lieu of total VOC:

(a) “Table 1 HAP” means the list of HAP appearing at 40 CFR Part 63, Subpart XX, Table 1.

(b) The term “C” in the equation above shall refer to the total concentration of Table 1 HAP in the cooling tower water if either of the following are satisfied:

i. Sampling is conducted using a continuous on-line monitor conforming to the requirements of 30 TAC § 115.764(a)(6), which is capable of

determining total Table 1 HAP and speciated Table 1 HAP concentrations in the cooling tower water; or

ii. Sampling is conducted following Section 6.2 of the TCEQ Sampling Procedures Manual, Appendix P to determine total Table 1 HAP and speciated Table 1 HAP concentrations in the cooling tower water.

Emissions from the cooling tower are not authorized if the VOC concentration of the water returning to the cooling tower exceeds 800 ppbw at any sampling point. Leaks associated with VOC concentrations above 800 ppbw are not subject to extensions for delay of repair under paragraph F of this permit condition.

E. Leaks (faulty equipment) shall be repaired at the earliest opportunity but no later than 45 calendar days after a leak is detected, unless the leak qualifies for delayed repair under paragraph F of this Special Condition. If the leak qualifies for delayed repair, then the leak shall be repaired according to the schedule specified in paragraph F of this Special Condition. In no case may repairs be delayed beyond the next shutdown.

F. The provisions of 40 CFR § 63.1088 (version published at 67 FR 46274; July 12, 2002), relating to situations where required repairs may be delayed, are incorporated by reference, except that each appearance of “HAP” shall be replaced by “VOC”.

G. Cooling towers shall each be equipped with drift eliminators having manufacturer’s design assurance of 0.0005% drift or less. Drift eliminators shall be maintained and inspected at least annually. The permit holder shall maintain records of all inspections and repairs.

H. The TDS content of the cooling water shall not exceed 5600 ppmw in any sample.

I. Cooling towers shall be analyzed for particulate emissions using one of the following methods:

(1) Cooling water shall be sampled at least once per day for TDS; or

(2) TDS monitoring may be reduced to weekly if conductivity is monitored daily and TDS is calculated using a ratio of TDS-to-conductivity (in ppmw per µmho/cm or ppmw/siemens). The ratio of TDS-to-conductivity shall be determined by concurrently monitoring TDS and conductivity on a weekly basis. The permit holder may use the average of two consecutive TDS-to-conductivity ratios to calculate daily TDS.

J. Cooling water sampling shall be representative of the cooling tower feed water and shall be conducted using approved methods.

(1) The analysis method for TDS shall be EPA Method 160.1, ASTM D5907, or SM 2540 C [SM - 19th edition of Standard Methods for Examination of Water]. Water samples should be capped upon collection, and transferred to a laboratory area for analysis.

(2) The analysis method for conductivity shall be either ASTM D1125-95A (field or routine laboratory testing) or ASTM D1125-95B (continuous monitor). The analysis may be conducted at the sample site or with a calibrated process conductivity meter. If a conductivity meter is used, it shall be calibrated at least annually. Documentation of the method and any associated calibration records shall be maintained.

(3) Alternate sampling and analysis methods may be used to comply with D(1) and D(2) with written approval from the TCEQ Regional Director.

(4) Records of all instrument calibrations and test results and process measurements used for the emission calculations shall be retained.

K. Emission rates of total particulate shall be calculated using the measured TDS, the design drift rate, the calculation methodology specified in the permit application (form PI-1 dated

April 19, 2017, as updated), and the daily maximum and average actual cooling water circulation rate for the short term and annual average rates. Alternately, the design maximum circulation rate may be used for all calculations.

Emission rates of PM_{10} and $PM_{2.5}$ shall be calculated as follows.

(1) The calculated PM_{10} emission rate shall equal 70% of the total particulate emission rate; and

(2) The calculated $PM_{2.5}$ emission rate shall equal 42% of the total particulate emission rate.

Emission records shall be updated monthly.

Wastewater Treatment Facilities

37. Process wastewater drains shall be equipped with water seals or equivalent. Lift stations, manholes, junction boxes, any other wastewater collection system components, and conveyances used to convey wastewater generated at the Olefins Plant or the Glycols Plant shall be equipped with a closed vent system that routes all organic vapors to a control device covered by this permit. Wastewater system components whose use is limited to the draining of process vessels during planned MSS activities, and which are not capable of receiving any continuously generated process wastewater stream, are exempt from the requirements of this Special Condition.

Water seals shall be checked by visual or physical inspection quarterly for indications of low water levels or other conditions that would reduce the effectiveness of water seal controls. Water seals shall be restored as necessary within 24 hours. Records shall be maintained of these inspections and any corrective actions taken.

38. The daily wastewater flow into the wastewater treatment plant shall be monitored and recorded. The rolling 12-month wastewater flow shall be totaled on a monthly basis. Wastewater flow shall be measured immediately downstream of the point where the outlets of the two Equalization Tanks are combined.

39. The minimum mixed liquor total suspended solids (MLSS) concentration in the aeration basins on a daily average basis shall not be less than 2000 mg/L. The MLSS concentration is the arithmetic average of all samples collected during the 24-hour period. The MLSS concentrations shall be monitored and recorded daily using Method 160.2 (Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020 or Method 2540D (Standard Methods of the Examination of Water and Wastewater, 18th Edition, American Public Health Association).

Emissions of VOC from the Wastewater Equalization Tanks (FINs ZWTK01 and ZWTK02) shall be controlled by a catalytic oxidizer (EPN ZWSRCO1A/B) which achieves 99% control of VOC, or has a VOC exhaust concentration not to exceed 10 ppmvd, corrected to 3% oxygen. The temperature at the inlet of the catalyst bed shall be maintained at no less than 700° F prior to the initial stack test. After the initial stack test has been completed, the six minute average temperature shall be equal to, or greater than the respective hourly average maintained during the most recent satisfactory stack testing required by Special Condition 62.

The temperature at the inlet to the catalyst bed shall be continuously monitored and recorded when waste gas is directed to the oxidizer. The temperature measurement device shall reduce the temperature readings to an averaging period of 6 minutes or less and record it at that frequency. The temperature measurement device shall be installed, calibrated, and maintained according to accepted practice and the manufacturer's specifications. The device shall have an accuracy of the

greater of ±0.75 percent of the temperature being measured expressed in degrees Celsius or ±2.5ºC.

40. Wastewater treatment plant emissions shall be estimated every month using the following procedure.

A. The permit holder shall sample the wastewater prior to the equalization tanks monthly to determine the concentrations of all air contaminants. Sampling locations, sampling procedures, test methods and calculations shall be as follows:

(1) The sampling locations shall be at the inlets to each Equalization Tank;

(2) Sampling procedures shall be as specified in the TPDES permit applicable to the site. A copy of the TPDES permit and any precedent application representations shall be submitted for inclusion in the file for this permit prior to the start of operation of the facilities covered by this permit;

(3) Test methods shall include EPA SW-846 methods 8260B, 8270C, and 8015B; and

(4) Calculations shall be as specified in permit application, PI-1 dated April 19, 2017, as updated.

The influent wastewater flow rates shall be measured and recorded when a sample required by this condition is collected. Records of sampling results shall be maintained for all air contaminants.

B. The permit holder shall calculate short term loading rate in terms of lb/hr and rolling 12-month loading rate in terms of tpy for each air contaminant. The measured concentrations of each speciated air contaminant shall be converted to an equivalent mass emission rate based upon the flow rates during the sample collection period using the calculation methods and assumptions in the permit application, PI-1 dated April 19, 2017, as updated. The MLSS used in the emission calculation shall be either the minimum identified in Special Condition 39 or the measured concentration for the day the sampling required for this condition is completed. The short term emission rate calculations for such air contaminants shall be based on the concentrations and flow rates measured during sampling. The rolling 12-month emission rate calculation for each air contaminant shall be based on the rolling 12-month average contaminant concentration and the rolling 12-month wastewater flow. All other inputs into the calculation shall match those in the permit application for that averaging period (worst case). Total VOC mass emission rates shall be calculated as the sum of the individual speciated VOC mass emission rates.

C. All air contaminants ascertained by the analytical methods shall be evaluated. For any tentatively identified air contaminant that can be confirmed as present and that would have a calculated air contaminant mass emission rate more than 0.04 pound per hour (lb/hr) above that represented in the permit application (PI-1 dated April 19, 2017, as updated), the total emissions of that compound must satisfy the following:

(1) The Effect Screening Level (ESL) for an air contaminant shall be obtained from the current TCEQ ESL list or by written request to the TCEQ Toxicology Section.

(2) The information below shall be recorded for the air contaminant.

(a) Chemical name(s), composition, and chemical abstract registry number if available.

(b) True vapor pressure at maximum hourly and annual average temperature.

(c) Molecular weight.

(d) Date air contaminant was detected in the sample.

(e) Material Safety Data Sheet or equivalent.

(f) Concentration of air contaminant detected in the wastewater.

D. Records of sampling location, sampling procedures, sample chain of custody forms, test methods, sampling results, calculated emission rates, and sample of calculations shall be maintained.

Control Device and Capture System Operational Specifications

41. The following requirements apply to vent gas combusted in any thermal control device (EPNs UFFLARE01, UFFLARE02, GFFLARE01, UFF01A, UFF01B, and GBX02).

A. Vent gas in the glycol vent system shall have a total sulfur content not to exceed 5 gr per 100 dscf on a 3 hour average.

B. Compliance with the requirements of Special Condition 1 and paragraph A of this Special Condition shall be demonstrated as follows:

(1) A continuous total sulfur analyzer shall be installed on the vent gas stream to the shared thermal oxidizers, the multi-point ground flare, the shared elevated flare, and to the utility boilers.

(a) The analyzer shall be installed and operated as specified by the manufacturer.

(b) Prior to the start of operation of the facilities covered by this permit, the permit holder shall obtain approval from the TCEQ Air Permits Division for proposed periodic performance evaluations and quality assurance procedures for the analyzer.

(2) A sample of the vent gas to the MEG thermal oxidizer and the MEG elevated flare shall be taken on a semi-annual basis and analyzed for total sulfur.

42. The following requirements apply to capture systems for each of the thermal control devices (EPNs UFFLARE01, UFFLARE02, GFFLARE01, UFF01A, UFF01B, and GBX02).

A. Complete either of the following.

(1) Conduct a once a month visual, audible, and/or olfactory inspection of the capture system to verify there are no leaking components in the capture system; or

(2) Once a year, verify the capture system is leak-free by inspecting in accordance with 40 CFR Part 60, Appendix A, Test Method 21. Leaks shall be indicated by an instrument reading greater than or equal to 500 ppmv above background.

B. Bypass of control devices shall be prevented through compliance with one of the following options:

(1) The control device shall not have a bypass; or

(2) If there is a bypass for the control device, comply with either of the following requirements:

(a) Install a position indicator that records the valve position, or a flow indicator that records the flow immediately downstream of each valve that if opened would allow a vent stream to bypass the control device and be emitted, either directly

or indirectly, to the atmosphere. The indicator must record flow or position and verify zero flow at least once every 15 minutes; or

(b) Once a month, inspect the valves, verifying that the position of the valves and the condition of the car seals prevent flow out the bypass.

A bypass does not include authorized analyzer vents, highpoint bleeder vents, low point drains, or rupture discs upstream of pressure relief valves if the pressure between the disc and relief valve is monitored and recorded at least weekly. A deviation shall be reported if the monitoring or inspections indicate bypass of the control device when it is required to be in service.

C. Records of the inspections required shall be maintained and if the results of any of the above inspections are not satisfactory, the permit holder shall promptly take necessary corrective action.

43. Reserved.

Multi-Point Ground Flare

44. The multi-point ground flare (EPN UFFLARE01) shall be designed and operated in accordance with the following requirements:

A. The requirements published at 81 FR 23480, 23484–23486 are incorporated herein by reference, except that the required minimum net heating value or lower flammability limit shall be that specified in the conditions of an Alternate Means of Control (AMOC) authorized by TCEQ or an Alternative Means of Emission Limitation (AMEL) authorized by EPA.

Elevated Flare

45. Elevated flares (EPNs UFFLARE02 and GFFLARE01) shall be designed and operated in accordance with the following requirements:

A. The flare systems shall be designed such that the combined assist natural gas and waste stream to each flare meets the 40 CFR § 60.18 specifications of minimum heating value and maximum tip velocity at all times when emissions may be vented to them.

The heating value and velocity requirements shall be satisfied during operations authorized by this permit. Flare testing per 40 CFR § 60.18(f) may be requested by the appropriate regional office to demonstrate compliance with these requirements.

B. The flare shall be operated with a flame present at all times and/or have a constant pilot flame. The pilot flame shall be continuously monitored by a thermocouple, infrared monitor, or ultraviolet monitor. The time, date, and duration of any loss of pilot flame shall be recorded. Each monitoring device shall be accurate to, and shall be calibrated at a frequency in accordance with, the manufacturer's specifications.

C. The flare shall be operated with no visible emissions except periods not to exceed a total of five minutes during any two consecutive hours. Compliance with this requirement shall be demonstrated by monitoring the flare tip with a video camera and retaining copies of video recordings.

D. The permit holder shall install a continuous flow monitor and calorimeter that provides a record of the actual flow rate and the net heating value of the vent stream to the flare. The flow monitor sensor and analyzer sample points shall be installed in the vent stream as near as possible to the flare inlet such that the total vent stream to the flare is measured and

analyzed. Readings shall be taken at least once every 15 minutes and the average hourly values of the flow and composition (or Btu content) shall be recorded each hour.

The monitors shall be calibrated or have a calibration check performed on an annual basis to meet the following accuracy specifications: the flow monitor shall be accurate to ±5.0% of flow for velocities greater than 1 ft/s, and accurate to ±20% of flow for velocities between 0.1 ft/s and 1 ft/s; the temperature monitor shall be accurate to ±2.0% at absolute temperature; and pressure monitor shall be accurate to ±5.0 mm Hg.

The calorimeter shall be calibrated, installed, operated, and maintained, in accordance with manufacturer recommendations, to continuously measure and record the net heating value of the gas sent to the flare, in British thermal units/standard cubic foot of the gas.

The monitors and analyzers shall operate as required by this section at least 95% of the time when the flare is operational, averaged over a rolling 12-month period. Flared gas net heating value and actual exit velocity determined in accordance with 40 CFR §§60.18(f)(3) and 60.18(f)(4) shall be recorded at least once every hour. Hourly mass emission rates shall be determined and recorded using the above readings and the emission factors used in the permit application, April 19, 2017, as updated.

E. [Reserved for additional requirements].

Thermal Oxidizers

46. The following requirements apply to the thermal oxidizers (EPNs UFF01A, UFF01B, and GBX02).

A. Each of the shared thermal oxidizers (EPNs UFF01A and UFF01B) shall maintain the VOC concentration in the exhaust gas less than 10 ppmv, or achieve a VOC destruction efficiency greater than:

(1) 99.9 percent for low-pressure vents from the olefins plant, resin degassing operations, storage tank emissions, and truck/railcar loading operations.

(2) 99 percent:

(a) During planned maintenance, startup or shutdown activities employing the shared thermal oxidizers as control; and

(b) for any combination of vent streams which includes spent nitrogen from polyethylene reactor grade transitions or from the regeneration of polyethylene feed treater beds.

B. The MEG thermal oxidizer (EPN GBX02) shall maintain the VOC concentration in the exhaust gas less than 10 ppmv, or achieve a VOC destruction efficiency greater than:

(1) 99.9 percent for the glycol purge vent stream.

(2) 99 percent for all other vent streams.

C. The firebox exit temperature of each thermal oxidizer shall be maintained at not less than 1400° F and exhaust oxygen concentration not less than 3 percent on a six-minute average while waste gas is being fed into the oxidizer prior to initial stack testing. After the initial stack test has been completed, the six minute average temperature shall be equal to, or greater than the respective hourly average maintained during the most recent satisfactory stack testing required by Special Condition 62 as follows:

(1) For each shared thermal oxidizers, the minimum temperature shall be the higher of the hourly average temperatures maintained under the two sampling scenarios referred to in Special Conditions 62.H(3)(a)–(b).

(2) For the MEG thermal oxidizer, the minimum temperature shall be the higher of the hourly average temperatures maintained under the two sampling scenarios referred to in Special Condition 62.H(4)(a)–(b).

D. The firebox exit temperature of each thermal oxidizer shall be continuously monitored and recorded when waste gas is directed to the oxidizer. The temperature measurement device shall reduce the temperature readings to an averaging period of 6 minutes or less and record it at that frequency. The temperature measurement device shall be installed, calibrated, and maintained according to accepted practice and the manufacturer's specifications. The device shall have an accuracy of the greater of ±0.75 percent of the temperature being measured expressed in degrees Celsius or ±2.5ºC.

Quality assured (or valid) data must be generated when the thermal oxidizer is operating except during the performance of a daily zero and span check. Loss of valid data due to periods of monitor break down, out-of-control operation (producing inaccurate data), repair, maintenance, or calibration may be exempted provided it does not exceed 5 percent of the time (in minutes) that the thermal oxidizer operated over the previous rolling 12-month period. The measurements missed shall be estimated using engineering judgment and the methods used recorded.

E. The oxygen analyzer used to satisfy Paragraph C of this Special Condition shall continuously monitor and record oxygen concentration when waste gas is directed to the oxidizer. It shall reduce the oxygen readings to an averaging period of 6 minutes or less and record it at that frequency.

F. The oxygen analyzer shall be zeroed and spanned daily and corrective action taken when the 24-hour span drift exceeds two times the amounts specified Performance Specification No. 3, 40 CFR Part 60, Appendix B. Zero and span is not required on weekends and plant holidays if instrument technicians are not normally scheduled on those days.

The analyzer shall be quality-assured at least semiannually using cylinder gas audits (CGAs) in accordance with 40 CFR Part 60, Appendix F, Procedure 1, § 5.1.2, with the following exception: a relative accuracy test audit is not required once every four quarters (i.e., two successive semiannual CGAs may be conducted). Successive semiannual audits shall occur no closer than four months. Necessary corrective action shall be taken for all CGA exceedances of ±15 percent accuracy and any continuous emissions monitoring system downtime in excess of 5 percent of the incinerator operating time. These occurrences and corrective actions shall be reported to the appropriate TCEQ Regional Director on a quarterly basis. Supplemental stack concentration measurements may be required at the discretion of the appropriate TCEQ Regional Director.

Quality-assurance methods equivalent to those specified in this paragraph may be approved by the TCEQ Regional Director or via alteration of this Special Condition.

G. The permit holder shall install a continuous flow monitor that provides a record of the actual flow rate of the vent stream to each thermal oxidizer. The flow monitor sensor shall be installed in the vent stream as near as possible to the control device inlet such that the total vent stream to the control device is measured and analyzed. Readings shall be taken at least once every 15 minutes and the average hourly values of the flow shall be recorded each hour.

H. The monitors shall be calibrated or have a calibration check performed on an annual basis to meet the following accuracy specifications: the flow monitor shall be ±5.0%, temperature monitor shall be ±2.0% at absolute temperature, and pressure monitor shall be ±5.0 mm Hg.

I. Quality assured (or valid) data must be generated when the thermal oxidizer is operating except during the performance of a daily zero and span check. Loss of valid data due to periods of monitor break down, out-of-control operation (producing inaccurate data), repair, maintenance, or calibration may be exempted provided it does not exceed 5 percent of the time (in minutes) that the thermal oxidizer operated over the previous rolling 12-month period. The measurements missed shall be estimated using engineering judgment and the methods used recorded.

J. Collateral emissions of NO_X shall not exceed 0.06 lb/MMBtu (HHV basis) from each thermal oxidizer.

Carbon Adsorption Systems

47. Except where otherwise noted in the Special Conditions of this permit, the following requirements apply to each CAS required by the permit.

A. The CAS shall be sampled once per hour when organic compounds may be directed to it, to determine breakthrough of VOC. The sampling point shall be at the outlet of the initial canister but before the inlet to the second or final polishing canister. Sampling shall be done during transfer of organic liquids into the Glycol Moderator Drum.

B. The VOC sampling and analysis shall be performed using an instrument with a flame ionization detector (FID), or a TCEQ-approved alternative detector. The instrument/FID must meet all requirements specified in Section 8.1 of EPA Method 21 (40 CFR 60, Appendix A). Sampling and analysis for VOC breakthrough shall be performed as follows:

(1) Immediately prior to performing sampling, the instrument/FID shall be calibrated with zero and span calibration gas mixtures. Zero gas shall be certified to contain less than 0.1 ppmv total hydrocarbons. Span calibration gas shall be methane at a concentration within ± 10 percent of 100 ppmv, and certified by the manufacturer to be ± 2 percent accurate. Calibration error for the zero and span calibration gas checks must be less than ± 5 percent of the span calibration gas value before sampling may be conducted.

(2) The sampling point shall be at the outlet of the initial canister but before the inlet to the second or final polishing canister. Sample ports or connections must be designed such that air leakage into the sample port does not occur during sampling.

(3) During sampling, data recording shall not begin until after two times the instrument response time. The VOC concentration shall be monitored for at least 5 minutes, and readings shall be recorded at least once per minute.

C. Breakthrough shall be defined as the highest 1 minute average measured VOC concentration at or exceeding 100 ppmv. When the condition of breakthrough of VOC from the initial saturation canister occurs, the waste gas flow shall be switched to the second canister and a fresh canister shall be placed as the new final polishing canister prior to the commencement of the next loading activity. Sufficient new activated carbon canisters shall be maintained at the site to replace spent carbon canisters such that replacements can be done in the above specified time frame.

D. Records of the CAS monitoring maintained at the plant site, shall include (but are not limited to) the following:

(1) Sample time and date.

(2) Monitoring results (ppmv).

(3) Corrective action taken including the time and date of that action.

(4) Process operations occurring at the time of sampling.

E. Alternate monitoring or sampling requirements that are equivalent or better may be approved by the TCEQ Regional Manager. Alternate requirements must be approved in writing before they can be used for compliance purposes.

F. The design of the CAS shall satisfy either of the following options:

(1) Either canister is capable of adsorbing all vapors generated from a transfer activity under anticipated worst-case operating conditions, and the permit holder retains the following records:

(a) Documentation of the anticipated worst-case operating conditions; and

(b) A copy of the CAS vendor or EPC contractor's statement as to the canister capacity for the specific VOC constituent(s) to be adsorbed; or

(2) The requirements of subparagraph (1) are not satisfied, and the required interval for replacement of canisters specified in paragraph C of this Special Condition shall be reduced to one hour.

Maintenance, Startup and Shutdown Activities

General

48. This permit authorizes the planned maintenance, startup, and shutdown (MSS) activities summarized in the MSS Activity Summary (Special Condition 49.C) attached to this permit.

Special Condition 49.A identifies the inherently low emitting MSS activities that may be performed at the plant. Emissions from activities identified in Special Condition 49.A shall be considered to be equal to the potential to emit represented in the permit application. The estimated emissions from the activities listed in Special Condition 49.A must be revalidated annually. This revalidation shall consist of the estimated emissions for each type of activity and the basis for that emission estimate.

Routine maintenance activities, as identified in Special Condition 49.B may be tracked through the work orders or equivalent. Emissions from activities identified in Special Condition 49.B shall be calculated using the number of work orders or equivalent that month and the emissions associated with that activity identified in the permit application.

The performance of each planned MSS activity not identified in Paragraphs A and B of Special Condition 49 and the emissions associated with it shall be recorded and include at least the following information:

A. the process unit at which emissions from the MSS activity occurred, including the emission point number and common name of the process unit;

B. the type of planned MSS activity and the reason for the planned activity;

C. the common name and the facility identification number, if applicable, of the facilities at which the MSS activity and emissions occurred;

D. the date and time of the MSS activity and its duration;

E. the estimated quantity of each air contaminant, or mixture of air contaminants, emitted with the data and methods used to determine it. The emissions shall be estimated using the methods identified in the permit application, consistent with good engineering practice.

The permit additionally authorizes the alternate operating mode summarized below. Records shall be created for each such activity containing the information specified in paragraphs A–E of this Special Condition, except that each instance of the phrase "MSS activity" or "planned MSS activity" shall be replaced by "activity."

Facility	Activity	EPN
Olefins, EPE, CPE and Utilities Plants	Operating during planned outage or low firing of two or more boilers; and operation during planned outage of both of the shared thermal oxidizers.	Shared Vent System

49. All MSS emissions shall be summed monthly and the rolling 12-month emissions shall be updated on a monthly basis. This permit authorizes emissions from the following temporary facilities used to support planned MSS activities at permanent site facilities: vacuum trucks, portable control devices identified in Special Condition 57, and controlled recovery systems. Emissions from temporary facilities are authorized provided the temporary facility (a) does not remain on the plant site for more than 12 consecutive months, (b) is used solely to support planned MSS activities at the permanent site facilities listed in this Special Condition, and (c) does not operate as a replacement for an existing authorized facility.

Planned startup and shutdown emissions due to the activities identified in this Special Condition are authorized from the facilities and temporary equipment and control devices identified in the Special Conditions of the permit.

A. Inherently low emitting maintenance activities

Reactor sampling

Low point drains

Management of sludge from pits, ponds, sumps, and water conveyances

Aerosol cans

Calibration of analytical equipment

Carbon canister replacement

Instrumentation/analyzer maintenance

Meter proving

Replacement of analyzer filters and screens

Pipeline pigging

Filter/strainer changeouts

Steam condensate drum flash

B. Routine maintenance

Pump repair/replacement

Fugitive component (valve, pipe, flange) repair/replacement (isolated volume ≤ 150 $ft.^3$)

Compressor repair/replacement (not including cracked gas compressor, propylene refrigerant compressor or ethylene refrigerant compressor)

Heat exchanger repair/replacement

Vessel repair/replacement (isolated volume ≤ 50 $ft.^3$)

Transfer of solid catalyst and desiccant to/from process equipment

Instrument/analyzer maintenance

C. MSS Activity Summary

Facility	Activity	EPN
Olefins, EPE, CPE and Utilities plants	Process startup and shutdown	Shared Vent System
Glycol plant	Process startup and shutdown	Glycol Vent System
Olefins, EPE, CPE, Utilities and Glycol plants	Depressurize and drain equipment following shutdown	Shared Vent System, Glycol Vent System
Floating roof storage tanks	Operate tank with landed roof, controlled degassing	TMPCTRL
All storage tanks	Ventilation, cleaning and inspection	MSSTANK
Vacuum trucks	Operate vacuum truck	MSSVAC
Frac Tanks	Operate frac tank	MSSFRAC
Olefins, EPE, CPE and Utilities plant piping, compressors, process vessels and reactors	Cleaning, inspection and maintenance activities not identified in paragraph B	MSSATM, TMPCTRL, Shared Vent System
Storage tanks, loading facilities, and wastewater facilities	Cleaning, inspection and maintenance activities not identified in paragraph B	MSSATM, TMPCTRL, Shared Vent System
Glycol plant piping, process vessels and reactors	Cleaning, inspection and maintenance activities not identified in paragraph B	MSSATM, TMPCTRL, Glycol Vent System
Routine maintenance activities	See paragraph B	MSSATM, TMPCTRL, Shared Vent System, Glycol Vent System
Inherently low emitting activities	See paragraph A	MSSILE

De-inventory of process units

50. Process units and facilities, with the exception of those identified in Special Conditions 26**,** 27, 49.A, and 56 shall be depressurized, emptied, degassed, and placed in service in accordance with the following requirements.

A. The process equipment shall be depressurized to a control device or a controlled recovery system prior to venting to atmosphere, degassing, or draining liquid. Equipment that only contains material that is liquid with VOC partial pressure less than 0.50 psi at the normal process temperature and 95°F may be opened to atmosphere and drained in accordance with paragraph C of this Special Condition. The vapor pressure at 95°F may be used if the

actual temperature of the liquid is verified to be less than 95°F and the temperature is recorded.

B. If mixed phase materials must be removed from process equipment, the cleared material shall be routed to a knockout drum or equivalent to allow for managed initial phase separation. If the VOC partial pressure is greater than 0.50 psi at either the normal process temperature or 95°F, any vents in the system must be routed to a control device or a controlled recovery system. The vapor pressure at 95°F may be used if the actual temperature of the liquid is verified to be less than 95°F and the temperature is recorded. Control must remain in place until degassing has been completed or the system is no longer vented to atmosphere.

C. All liquids from process equipment or storage vessels must be removed to the maximum extent practical prior to opening equipment to commence degassing and/or maintenance. Liquids must be drained into a closed vessel or closed liquid recovery system unless prevented by the physical configuration of the equipment. If it is necessary to drain liquid into an open pan or sump, the liquid must be covered or transferred to a covered vessel within one hour of being drained.

D. If the VOC partial pressure is greater than 0.50 psi at the normal process temperature or 95°F, facilities shall be degassed using good engineering practice to ensure air contaminants are removed from the system through the control device or controlled recovery system to the extent allowed by process equipment or storage vessel design. The vapor pressure at 95°F may be used if the actual temperature of the liquid is verified to be less than 95°F and the temperature is recorded. The facilities to be degassed shall not be vented directly to atmosphere, except as necessary to establish isolation of the work area or to monitor VOC concentration following controlled depressurization. The venting shall be minimized to the maximum extent practicable and actions taken recorded. The control device or recovery system utilized shall be recorded with the estimated emissions from controlled and uncontrolled degassing calculated using the methods that were used to determine allowable emissions for the permit application.

(1) For MSS activities identified in Special Condition 49.B, the following option may be used in lieu of (2) below. The facilities being prepared for maintenance shall not be vented directly to atmosphere until the VOC concentration has been verified to be less than 10 percent of the lower explosive limit (LEL) per the site safety procedures.

(2) The locations and/or identifiers where the purge gas or steam enters the process equipment or storage vessel and the exit points for the exhaust gases shall be recorded (process flow diagrams [PFDs] or piping and instrumentation diagrams [P&IDs] may be used to demonstrate compliance with the requirement). If the process equipment is purged with a gas, two system volumes of purge gas must have passed through the control device or controlled recovery system before the vent stream may be sampled to verify acceptable VOC concentration prior to uncontrolled venting. The VOC sampling and analysis shall be performed using an instrument meeting the requirements of Special Condition 54. The sampling point shall be upstream of the inlet to the control device or controlled recovery system. The sample ports and the collection system must be designed and operated such that there is no air leakage into the sample probe or the collection system downstream of the process equipment or vessel being purged. If there is not a connection (such as a sample, vent, or drain valve) available from which a representative sample may be obtained, a sample may be taken upon entry into the system after degassing has been completed. The sample shall be taken from inside the vessel so as to minimize any air or dilution from the entry point. The facilities shall be degassed to a control device or controlled recovery system until the VOC concentration is less than 10,000 ppmv or 10 percent of the LEL.

Documented site procedures used to de-inventory equipment to a control device for safety purposes (i.e., hot work or vessel entry procedures) that achieve at least the same level of purging may be used in lieu of the above.

E. Gases and vapors with VOC partial pressure greater than 0.50 psi may be vented directly to atmosphere if all the following criteria are met:

(1) It is not technically practicable to depressurize or degas, as applicable, into the process.

(2) There is not an available connection to a plant control system (flare).

(3) There is no more than 50 lb of air contaminant to be vented to atmosphere during shutdown or startup, as applicable.

All instances of venting directly to atmosphere provided for under paragraph E of this Special Condition shall be documented when occurring as part of any MSS activity. The emissions associated with venting without control must be included in the work order or equivalent for those planned MSS activities identified in Attachment B.

Storage Tanks

51. This permit authorizes emissions from EPNs MSSTANK and from control devices identified in Special Condition 57 (controlled sources) for the floating roof storage tanks identified in Special Condition 26 during planned floating roof landings. Tank roof landings include all operations when the tank floating roof is on its supporting legs. These emissions are subject to the maximum allowable emission rates indicated in the MAERT. The following requirements apply to tank roof landings.

A. At all times that the roof is resting on its leg supports, the tank emissions shall be controlled by a closed vent system and control device meeting the following specifications:

(1) The closed vent system shall be designed to collect all VOC vapors and gases discharged from the storage vessel and operated with no detectable emissions as indicated by an instrument reading of less than 500 ppm above background and visual inspections, as determined in 40 CFR Part 60, Subpart VV, § 60.485(b).

(2) The locations and identifiers of vents other than permanent roof fittings and seals, control device or controlled recovery system, and controlled exhaust stream shall be recorded. There shall be no other gas/vapor flow out of the vapor space under the floating roof when the vapor space is directed to the control device. The vapor recovery system collection rate shall be no less than 100 cubic feet per minute when the tank is idle or the tank is being drained, and two times the fill rate when the tank is being refilled.

(3) The control device shall be operated as required by Special Condition No 57.

The roof shall be landed on its lowest legs unless entry or inspection is planned.

The requirements of this Paragraph do not apply to uncontrolled degassing and/or ventilation conducted pursuant to Paragraphs C–E of this Special Condition.

B. The control requirements of Paragraph A of this Special Condition may be waived during emptying and set-up for tank degassing if the following conditions are met:

(1) The tank will be completely emptied for the purposes of inspection and maintenance.

(2) The process of emptying the tank when the roof is resting on the leg supports shall be continuous and shall be accomplished as rapidly as practicable.

(3) Degassing of the vapor space under the landed roof begins within 24 hours after the tank has been emptied.

C. After the tank has been completely emptied, the tank shall not be opened except as necessary to set up for degassing and cleaning. Floating roof tanks with liquid capacities less than 100,000 gallons may be degassed without control if the VOC partial pressure of the standing liquid in the tank has been reduced to less than 0.02 psia prior to ventilating the tank. Controlled degassing of the vapor space under the landed roof shall be completed as follows:

(1) Any gas or vapor removed from the vapor space under the floating roof must be routed to a control device or controlled recovery system and controlled degassing must be maintained until the VOC concentration is less than 10,000 ppmv or 10 percent of the LEL. The locations and identifiers of vents other than permanent roof fittings and seals, control device or controlled recovery system, and controlled exhaust stream shall be recorded. There shall be no other gas/vapor flow out of the vapor space under the floating roof when degassing to the control device or controlled recovery system.

(2) The vapor space under the floating roof shall be vented using good engineering practice to ensure air contaminants are flushed out of the tank through the control device or controlled recovery system to the extent allowed by the storage tank design.

(3) A volume of purge gas equivalent to twice the volume of the vapor space under the floating roof must have passed through the control device or into a controlled recovery system, before the vent stream may be sampled to verify acceptable VOC concentration. The measurement of purge gas volume shall not include any make-up air introduced into the control device or recovery system. The VOC sampling and analysis shall be performed as specified in Special Condition No. 54.

(4) The sampling point shall be upstream of the inlet to the control device or controlled recovery system. The sample ports and the collection system must be designed and operated such that there is no air leakage into the sample probe or the collection system downstream of the process equipment or vessel being purged.

(5) Degassing must be performed every 24 hours unless there is no standing liquid in the tank or the VOC partial pressure of the remaining liquid in the tank is less than 0.15 psia.

D. The tank shall not be opened or ventilated without control, except as allowed by (1) or (2) below until one of the criteria in Paragraph E of this Special Condition is satisfied.

(1) Minimize air circulation in the tank vapor space.

(a) One manway may be opened to allow access to the tank to remove or de-volatilize the remaining liquid. Other manways or access points may be opened as necessary to remove or de-volatilize the remaining liquid. Wind barriers shall be installed at all open manways and access points to minimize air flow through the tank.

(b) Access points shall be closed when not in use.

(2) Minimize time and VOC partial pressure. (this option may be used only if justified by the applicant)

(a) The VOC partial pressure of the liquid remaining in the tank shall not exceed 0.044 psia as documented by the method specified in subparagraph D(1) of this condition;

(b) Blowers may be used to move air through the tank without emission control at a rate not to exceed 1000 cfm for no more than 72 hours. All standing liquid shall be removed from the tank during this period; and

(c) Records shall be maintained of the blower circulation rate, the duration of uncontrolled ventilation, and the date and time all standing liquid was removed from the tank.

E. The tank may be opened without restriction and ventilated without control after all standing liquid has been removed from the tank or the liquid remaining in the tank has a VOC partial pressure of less than 0.02 psia. These criteria shall be demonstrated in one of the following ways:

(1) Low VOC partial pressure liquid that is soluble with the liquid previously stored may be added to the tank to lower the VOC partial pressure of the liquid mixture remaining in the tank to less than 0.02 psia. This liquid shall be added during tank degassing if practicable. The estimated volume of liquid remaining in the drained tank and the volume and type of liquid added shall be recorded. The liquid VOC partial pressure may be estimated based on this information and engineering calculations.

(2) If water is added or sprayed into the tank to remove standing VOC, one of the following must be demonstrated:

(a) Take a representative sample of the liquid remaining in the tank and verify no visible sheen using the static sheen test from 40 CFR Part 435, Subpart A, Appendix 1.

(b) Take a representative sample of the liquid remaining in the tank and verify that the hexane soluble VOC concentration is less than 1000 ppmw using EPA method 1664.

(c) Stop ventilation and close the tank for at least 24 hours. When the tank manway is opened after this period, verify that the VOC concentration is less than 1000 ppmw through the procedure in Special Condition No 54.

(3) No standing liquid, verified through visual inspection.

The permit holder shall maintain records to document the method used to release the tank.

F. The occurrence of each roof landing and the associated emissions shall be recorded and the rolling 12-month tank roof landing emissions shall be updated on a monthly basis. These records shall include at least the following information (as applicable):

(1) The identification of the tank and emission point number, and any control devices or controlled recovery systems used to reduce emissions;

(2) The reason for the tank roof landing;

(3) For the purpose of estimating emissions, the date, time, and other information specified for each of the following events:

(a) The roof was initially landed;

(b) All liquid was pumped from the tank to the extent practicable;

(c) Start and completion of controlled degassing, and total volumetric flow;

(d) All standing liquid was removed from the tank or any transfers of low VOC partial pressure liquid to or from the tank including volumes and vapor pressures to reduce tank liquid VOC partial pressure to < 0.02 psia.

(e) If there is liquid in the tank, VOC partial pressure of liquid, start and completion of uncontrolled degassing, and total volumetric flow;

(f) Refilling commenced, liquid filling the tank, and the volume necessary to float the roof; and

(g) Tank roof off supporting legs, floating on liquid.

(4) The estimated quantity of each air contaminant, or mixture of air contaminants, emitted between events (c) and (g) with the data and methods used to determine it. The emissions associated with roof landing activities shall be calculated using the methods described in Section 7.1.3.2 of AP 42 "Compilation of Air Pollution Emission Factors, Chapter 7—Storage of Organic Liquids" dated November 2006 (or later edition) and the permit application.

52. Fixed roof storage tanks are subject to the requirements of Special Condition 51.D and 51.E. If the ventilation of the vapor space is controlled, the emission control system shall meet the requirements of Special Condition 51.C(1)–(4). Records shall be maintained per Special Condition 51.F(3)(c)–(e) and 51.F(4).

Solids Handling

53. Transfer of solid materials, including catalyst and desiccant, to or from process equipment shall be conducted consistent with the following requirements:

A. Particulate emissions shall be minimized as follows during loading of solids into process equipment:

(1) Equipment for loading solids shall be designed and configured such that solids are dropped from a height not to exceed 2 feet; or

(2) A vacuum or vacuum truck shall be used to convey solids, where the vacuum/vacuum truck exhaust is controlled using a HEPA filter or portable dust collector.

B. Particulate emissions shall be minimized as follows during unloading of solids from process equipment using one of the following methods:

(1) Process equipment shall be flooded with water prior to transfer of solids;

(2) Solids shall be transferred to a bin or container which minimize the action of wind currents on dust formation; or

(3) If a portable vacuum or vacuum truck is used to remove solids, the system shall be enclosed such that the only vent to the atmosphere is through the vacuum/vacuum truck exhaust, and such exhaust shall be controlled using a HEPA filter or portable dust collector.

C. The permit holder shall record the type of solids transferred, the method of transfer, and the type of control device employed (if any).

Analytical Methods

54. Air contaminant concentration shall be measured using an instrument/detector meeting one set of requirements specified below.

A. VOC concentration shall be measured using an instrument meeting all the requirements specified in EPA Method 21 (40 CFR 60, Appendix A) with the following exceptions:

(1) The instrument shall be calibrated within 24 hours of use with a calibration gas such that the response factor (RF) of the VOC (or mixture of VOCs) to be monitored shall be less than 2.0. The calibration gas and the gas to be measured, and its approximate RF shall be recorded. If the RF of the VOC (or mixture of VOCs) to be monitored is greater than 2.0, the VOC concentration shall be determined as follows:

VOC Concentration = Concentration as read from the instrument*RF

In no case should a calibration gas be used such that the RF of the VOC (or mixture of VOCs) to be monitored is greater than 5.0.

(2) Sampling shall be performed as directed by this permit in lieu of section 8.3 of Method 21. During sampling, data recording shall not begin until after two times the instrument response time. The date and time shall be recorded, and VOC concentration shall be monitored for at least 5 minutes, recording VOC concentration each minute. As an alternative, the VOC concentration may be monitored over a five-minute period with an instrument designed to continuously measure concentration and record the highest concentration read. The highest measured VOC concentration shall be recorded and shall not exceed the specified VOC concentration limit prior to uncontrolled venting.

B. Colorimetric gas detector tubes may be used to determine air contaminant concentrations if they are used in accordance with the following requirements.

(1) The air contaminant concentration measured as defined in (3) is less than 80 percent of the range of the tube and is at least 20 percent of the maximum range of the tube.

(2) The tube is used in accordance with the manufacturer's guidelines.

(3) At least 2 samples taken at least 5 minutes apart must satisfy the following prior to uncontrolled venting:

measured contaminant concentration (ppmv) < release concentration.

Where the release concentration is:

10,000*mole fraction of the total air contaminants present that can be detected by the tube.

The mole fraction may be estimated based on process knowledge. The release concentration and basis for its determination shall be recorded.

Records shall be maintained of the tube type, range, measured concentrations, and time the samples were taken.

C. Lower explosive limit measured with a lower explosive limit detector.

(1) The calibration gas shall be documented in the site safety procedures.

(2) The detector shall be calibrated within 30 days of use with a certified gas standard at 25% of the lower explosive limit (LEL) for the calibration gas. Records of the calibration date/time and calibration result (pass/fail) shall be maintained.

(3) A functionality test shall be performed on each detector within 24 hours of use with a certified gas standard at 25% of the LEL for the calibration gas. The LEL monitor shall read no lower than 90% of the calibration gas certified value. Records, including the date/time and test results, shall be maintained.

(4) A certified methane gas standard equivalent to 25% of the LEL for the calibration gas may be used for calibration and functionality tests provided that the LEL response is within 95% of that for the calibration gas.

Temporary facilities and control devices

55. The following requirements apply to vacuum and air mover truck operations to support planned MSS at this site:

A. Prior to initial use, identify any liquid in the truck. Record the liquid level and document the VOC partial pressure. After each liquid transfer, identify the liquid, the volume transferred, and its VOC partial pressure.

B. If vacuum pumps or blowers are operated when liquid is in or being transferred to the truck, the following requirements apply:

(1) If the VOC partial pressure of the liquid in or being transferred to the truck is greater than 0.50 psi at 95°F, the vacuum/blower exhaust shall be routed to a control device or a controlled recovery system.

(2) Equip fill line intake with a "duckbill" or equivalent attachment if the hose end cannot be submerged in the liquid being collected.

(3) A daily record containing the information identified below is required for each vacuum truck in operation at the site each day.

(a) For each liquid transfer made with the vacuum operating, record the duration of any periods when air may have been entrained with the liquid transfer. The reason for operating in this manner and whether a "duckbill" or equivalent was used shall be recorded. Short, incidental periods, such as those necessary to walk from the truck to the fill line intake, do not need to be documented.

(b) If the vacuum truck exhaust is controlled with a control device other than an engine or oxidizer, VOC exhaust concentration upon commencing each transfer, at the end of each transfer, and at least every hour during each transfer shall be recorded, measured using an instrument meeting the requirements of Special Condition 54.A or 54.B.

C. Record the volume in the vacuum truck at the end of the day, or the volume unloaded, as applicable.

D. The permit holder shall determine the vacuum truck emissions each month using the daily vacuum truck records and the calculation methods utilized in the permit application. If records of the volume of liquid transferred for each pick-up are not maintained, the emissions shall be determined using the physical properties of the liquid vacuumed with the greatest potential emissions. Rolling 12 month vacuum truck emissions shall also be determined on a monthly basis.

E. If the permit holder determines that the VOC partial pressure of all the liquids vacuumed into the truck is less than 0.10 psi, such determination shall be recorded when the truck is unloaded or leaves the plant site and the emissions may be estimated as the maximum potential to emit for a truck in that service as documented in the permit application. The recordkeeping requirements in Paragraphs A–D do not apply.

56. The following requirements apply to frac, or temporary, tanks and vessels used in support of MSS activities.

A. The exterior surfaces of these tanks/vessels that are exposed to the sun shall be white or aluminum. This requirement does not apply to tanks/vessels that only vent to atmosphere when being filled, sampled, gauged, or when removing material.

B. These tanks/vessels must be covered and equipped with fill pipes that discharge within 6 inches of the tank/vessel bottom.

C. These requirements do not apply to vessels storing less than 450 gallons of liquid that are closed such that the vessel does not vent to atmosphere except when filling, sampling, gauging, or when removing material.

D. The permit holder shall maintain an emissions record which includes calculated emissions of VOC from all frac tanks during the previous calendar month and the past consecutive 12-month period. This record must be updated by the last day of the month following. The record shall include tank identification number, dates put into and removed from service, control method used, tank capacity and volume of liquid stored in gallons, name of the material stored, VOC molecular weight, and VOC partial pressure at the estimated monthly average material temperature in psia. Filling emissions for tanks shall be calculated using the TCEQ publication titled "Technical Guidance Package for Chemical Sources - Loading Operations" and standing emissions determined using: the TCEQ publication titled "Technical Guidance Package for Chemical Sources - Storage Tanks."

E. If the tank/vessel is used to store liquid with VOC partial pressure less than 0.10 psi at 95°F, records may be limited to the days the tank is in service and the liquid stored. Emissions may be estimated based upon the potential to emit as identified in the permit application.

57. Control devices required by this permit for emissions from planned MSS activities are limited to those types identified in this condition. Control devices shall be operated with no visible emissions except periods not to exceed a total of 5 minutes during any two consecutive hours. Each device used must meet all the requirements identified for that type of control device.

Controlled recovery systems identified in this permit shall be directed to an operating process or to a collection system that is vented through a control device meeting the requirements of this permit condition.

A. Carbon Adsorption System (CAS).

(1) The CAS shall consist of 2 carbon canisters in series with adequate carbon supply for the emission control operation.

(2) The CAS shall be sampled downstream of the first can and the concentration recorded at least once every hour of CAS run time to determine breakthrough of the VOC.

(3) The method of VOC sampling and analysis shall be by detector meeting the requirements of Special Condition 54.A or B.

(4) Breakthrough is defined as the highest measured VOC concentration at or exceeding 100 ppmv above background. When the condition of breakthrough of VOC from the initial saturation canister occurs, the waste gas flow shall be switched to the second canister and a fresh canister shall be placed as the new final polishing canister within 4 hours. Sufficient new activated carbon canisters shall be maintained at the site to replace spent carbon canisters such that replacements can be done in the above specified time frame.

(5) Records of CAS monitoring shall include the following:

(a) Sample time and date.

(b) Monitoring results (ppmv).

(c) Canister replacement log.

(6) Single canister systems are allowed if the time the carbon canister is in service is limited to no more than 30 percent of the minimum potential saturation time. The permit holder shall maintain records for these systems, including the calculations performed to determine the saturation time. The time limit on carbon canister service shall be recorded and the expiration date attached to the carbon can.

B. Thermal Oxidizer.

(1) The thermal oxidizer firebox exit temperature shall be maintained at not less than 1400°F and waste gas flows shall be limited to assure at least a 0.5 second residence time in the fire box while waste gas is being fed into the oxidizer.

(2) The thermal oxidizer exhaust temperature shall be continuously monitored and recorded when waste gas is directed to the oxidizer. The temperature measurements shall be made at intervals of six minutes or less and recorded at that frequency.

The temperature measurement device shall be installed, calibrated, and maintained according to accepted practice and the manufacturer's specifications. The device shall have an accuracy of the greater of ±0.75 percent of the temperature being measured expressed in degrees Celsius or ±2.5ºC.

C. Internal Combustion Engine.

(1) The internal combustion engine shall have a VOC destruction efficiency of at least 99 percent.

(2) The engine must have been stack tested with butane or propane to confirm the required destruction efficiency within the period specified in subparagraph 3 below. VOC shall be measured in accordance with the applicable EPA Reference Method during the stack test and the exhaust flow rate may be determined from measured fuel flow rate and measured oxygen concentration. A copy of the stack test report shall be maintained with the engine. There shall also be documentation of acceptable VOC emissions following each occurrence of engine maintenance that may reasonably be expected to increase emissions including oxygen sensor replacement and catalyst cleaning or replacement. Stain tube indicators specifically designed to measure VOC concentration shall be acceptable for this documentation, provided a hot air probe or equivalent device is used to prevent error due to high stack temperature, and three sets of concentration measurements are made and averaged. Portable VOC analyzers meeting the requirements of Special Condition 54.A are also acceptable for this documentation.

(3) The engine shall be operated and monitored as specified below.

(a) If the engine is operated with an oxygen sensor-based air-to-fuel ratio (AFR) controller, documentation for each AFR controller that the manufacturer's or supplier's recommended maintenance has been performed, including replacement of the oxygen sensor as necessary for oxygen sensor-based controllers shall be maintained with the engine. The oxygen sensor shall be replaced at least quarterly in the absence of a specific written recommendation. The engine must have been stack tested within the past 12 months in accordance with Subparagraph (2) above.

The test period may be extended to 24 months if the engine exhaust is sampled once an hour when waste gas is directed to the engine using a detector meeting the requirements of Special Condition 54.A. The sample ports and the collection system must be designed and operated such that there is no air leakage into the sample probe or the collection system downstream of the engine. The

concentrations shall be recorded and the MSS activity shall be stopped as soon as possible if the VOC concentration exceeds 100 ppmv above background.

(b) If an oxygen sensor-based AFR controller is not used, the engine exhaust to atmosphere shall be monitored continuously and the VOC concentration recorded at least once every 15 minutes when waste gas is directed to the engine. The sample ports and the collection system must be designed and operated such that there is no air leakage into the sample probe or the collection system downstream of the engine. The method of VOC sampling and analysis shall be by detector meeting the requirements of Special Condition 54.A. An alarm shall be installed such that an operator is alerted when outlet VOC concentration exceeds 100 ppmv above background. The MSS activity shall be stopped as soon as possible if the VOC concentration exceeds 100 ppmv above background for more than one minute. The date and time of all alarms and the actions taken shall be recorded. The engine must have been stack tested within the past 24 months in accordance with Subparagraph (2) above.

D. A permanent control device specified in the permit, operated as required in the applicable permit Special Conditions.

E. A liquid scrubbing system may be used upstream of carbon adsorption. A single carbon can or a liquid scrubbing system may be used as the sole control device if the requirements below are satisfied.

(1) The exhaust to atmosphere shall be monitored continuously and the VOC concentration recorded at least once every 15 minutes when waste gas is directed to the scrubber.

(2) The method of VOC sampling and analysis shall be by detector meeting the requirements of Special Condition 54.A.

(3) An alarm shall be installed such that an operator is alerted when outlet VOC concentration exceeds 100 ppmv above background. The MSS activity shall be stopped as soon as possible when the VOC concentration exceeds 100 ppmv above background for more than one minute. The date and time of all alarms and the actions taken shall be recorded.

F. A closed loop refrigerated vapor recovery system

(1) The vapor recovery system shall be installed on the facility to be degassed using good engineering practice to ensure air contaminants are flushed from the facility through the refrigerated vapor condensers and back to the facility being degassed. The vapor recovery system and facility being degassed shall be enclosed except as necessary to insure structural integrity (such as roof vents on a floating roof tank).

(2) VOC concentration in vapor being circulated by the system shall be sampled and recorded at least once every 4 hours at the inlet of the condenser unit with an instrument meeting the requirements of Special Condition 54.

(3) The quantity of liquid recovered from the tank vapors and the tank pressure shall be monitored and recorded each hour. The liquid recovered must increase with each reading and the tank pressure shall not exceed one inch water pressure while the system is operating.

Use of permits by rule

58. Additional occurrences of MSS activities authorized by this permit may be authorized under permit by rule only if conducted in compliance with this permit's procedures, emission controls, monitoring, and recordkeeping requirements applicable to the activity.

Miscellaneous Sources

59. During laboratory operations (EPN U_LAB), gas sample cylinders shall be depressurized to a CAS which ensures an outlet VOC concentration of no greater than 100 ppmv prior to cleaning. The permit holder shall obtain and adhere to all manufacturers' recommendations for replacing carbon canisters at appropriate intervals to ensure that breakthrough does not occur.

60. The following requirements apply to emergency generators (EPNs EMGGEN01, EMGGEN02, ADMINGEN, U_GEN4, U_GEN5, GLYGEN01) and the emergency firewater pump (EPN FWP1, FWP2).

A. Fuel for the engine shall be limited to ultra-low sulfur diesel (ULSD) containing no more than 15 ppmw total sulfur.

B. The engine shall be limited to 100 hours per year during non-emergency situations, as defined at 40 CFR § 63.6640(f).

C. The engine shall be equipped with a non-resettable hour meter.

D. Each emergency generator shall satisfy the Tier 4 exhaust emission standards specified at 40 CFR § 1039.101 for model years 2015 and later.

E. Each firewater pump shall satisfy the Tier 3 exhaust emission standards specified at 40 CFR § 89.112.

F. Compliance with the emission limits of paragraph D and E of this Special Condition shall be demonstrated by retaining a copy of the manufacturers' certificate of conformity, or through other methods receiving prior written approval of the TCEQ Executive Director.

61. All ammonia vapors generated during unloading of ammonia and depressurization of ammonia storage and transport vessels shall be captured and directed to the ammonia diffusion chamber (EPN U_NH3SMP). The ammonia diffusion chamber shall capture 100% of ammonia vapors directed to it, as demonstrated through compliance with paragraphs A–B of this Special Condition.

A. Prior to introduction of ammonia, the ammonia diffusion chamber shall be filled with no less than two gallons of fresh water per pound of ammonia vapors that may be discharged into the chamber.

B. The ammonia diffusion chamber shall be designed to ensure complete mixing of ammonia vapors into the standing water.

C. The permit holder shall complete removal of wastewater from the diffusion chamber to a closed storage vessel or treatment system as soon as practicable, and removal shall commence within one hour of completion of the transfer or depressurization activity.

Initial Demonstration of Compliance

62. The permit holder shall perform stack sampling and other testing as required to establish the actual pattern and quantities of air contaminants being emitted into the atmosphere from the sources of emissions specified in Paragraph G of this Special Condition, and to demonstrate compliance with Special Conditions 1, 21, 23, 39, and 46. The permit holder is responsible for providing sampling and testing facilities and conducting the sampling and testing operations at his expense. Sampling shall be conducted in accordance with the appropriate procedures of the TCEQ Sampling Procedures Manual and the EPA Reference Methods.

Requests to waive testing for any pollutant specified in this condition shall be submitted to the TCEQ Office of Air, Air Permits Division. Test waivers and alternate/equivalent procedure proposals for Title 40 Code of Federal Regulation Part 60 (40 CFR Part 60) testing which must have EPA approval shall be submitted to the TCEQ Regional Director.

A. The appropriate TCEQ Regional Office shall be notified not less than 45 days prior to sampling. The notice shall include:

(1) Proposed date for pretest meeting.

(2) Date sampling will occur.

(3) Name of firm conducting sampling.

(4) Type of sampling equipment to be used.

(5) Method or procedure to be used in sampling.

(6) Description of any proposed deviation from the sampling procedures specified in this permit or TCEQ/EPA sampling procedures.

(7) Procedure/parameters to be used to determine worst case emissions during the sampling period.

The purpose of the pretest meeting is to review the necessary sampling and testing procedures, to provide the proper data forms for recording pertinent data, and to review the format procedures for the test reports. The TCEQ Regional Director must approve any deviation from specified sampling procedures.

B. Air contaminants to be tested for include (but are not limited to) those specified in paragraph G of this Special Condition. Sampling for SO_2 shall be required for one of the utility boilers and for one of the shared thermal oxidizers. Sampling for VOC shall be required for one dryer per PE unit.

C. Sampling shall occur within 60 days after achieving the maximum operating rate, but no later than 180 days after initial start-up of the facilities and at such other times as may be required by the TCEQ Executive Director. Additionally, sampling for CO and NO_X shall be repeated at an interval of once every five years for the MEG Thermal Oxidizer. The requirement to complete sampling for shared thermal oxidizers shall be extended to no later than 365 days after initial start-up of any polyethylene unit. Requests for additional time to perform sampling shall be submitted to the appropriate TCEQ Regional Office.

D. The facility being sampled shall operate as indicated in Paragraph H during stack emission testing. These conditions/parameters and any other primary operating parameters that affect the emission rate shall be monitored and recorded during the stack test. Any additional parameters shall be determined at the pretest meeting and shall be stated in the sampling report. Permit conditions and parameter limits may be waived during stack testing performed under this condition if the proposed condition/parameter range is identified in the test notice

specified in Paragraph A and accepted by the TCEQ Regional Office. Permit allowable emissions and emission control requirements are not waived and still apply during stack testing periods.

During subsequent operations, stack sampling shall be performed within 120 days for the following sources if the following requirements are satisfied. This sampling may be waived by the TCEQ Air Section Manager for the Region.

(1) For each combustion unit, with respect to sampling for NO_X, if the 3-hr average firing rate exceeds the higher of:

(a) the firing rate demonstrated during the most recent stack test for the combustion unit; or

(b) the firing rate demonstrated during the most recent stack test for any identical combustion unit.

(2) For any pyrolysis furnace, sampling for PM_{10} shall be required if a violation of Special Condition 18 occurs during decoking operations. The time required to complete sampling shall be extended to 365 days. This requirement shall not apply more than one time per furnace.

(3) For each dryer vent, if the unit produces a grade of resin with a total residual VOC content that exceeds 150% of that determined during the most recent stack test.

E. Copies of the final sampling report shall be forwarded to the offices below within 60 days after sampling is completed. Sampling reports shall comply with the attached provisions entitled "Chapter 14, Contents of Sampling Reports" of the TCEQ Sampling Procedures Manual. The reports shall be distributed as follows:

One copy to the appropriate TCEQ Regional Office.
One copy to each local air pollution control program.

F. Sampling ports and platform(s) shall be incorporated into the design of each source listed in paragraph G according to the specifications set forth in the attachment entitled "Chapter 2, Guidelines For Stack Sampling Facilities" of the TCEQ Sampling Procedures Manual. Alternate sampling facility designs must be submitted for approval to the TCEQ Regional Director.

G. Sources of Emissions subject to stack sampling requirements, and pollutants to be tested, are as follows:

EPN	Source Name	Pollutant (required sampling indicated by X; conditional sampling indicated by †)					
		VOC	CO	NO_X	NH_3	PM_{10}	SO_2
O_FAF01	Pyrolysis Furnace A		X	X	X	†	
O_FBF01	Pyrolysis Furnace B		X	X	X		
O_FCF01	Pyrolysis Furnace C		X	X	X		
O_FDF01	Pyrolysis Furnace D		X	X	X		
O_FEF01	Pyrolysis Furnace E		X	X	X		
O_FFF01	Pyrolysis Furnace F		X	X	X		
O_FGF01	Pyrolysis Furnace G		X	X	X		
O_FHF01	Pyrolysis Furnace H		X	X	X		
USSG01A	Utilities Boiler A		X	X	X		X
USSG01B	Utilities Boiler B		X	X	X		
USSG01C	Utilities Boiler C		X	X	X		
UFF01A	Shared Thermal Oxidizer A	X	X	X			X

UFF01B	Shared Thermal Oxidizer B	X	X	X			
GBX02	MEG Thermal Oxidizer	X	X	X			
ZWSRCO1A/B	Equalization Tanks Catalytic Oxidizer	X					
EMFAN01	EPE Pellet Dryer 1 Vent	X					
EMFAN02	EPE Pellet Dryer 2 Vent						
CMFAN01	CPE Pellet Dryer 1 Vent	X					
CMFAN02	CPE Pellet Dryer 2 Vent						

H. Facilities shall operate as follows during sampling:

(1) For pyrolysis furnaces, sampling shall occur at the maximum heat duty that can be reasonably achieved during sampling (NO_X, CO and NH_3). In case sampling for PM_{10} is required for any furnace, such sampling shall occur during decoking operations.

(2) For utility boilers, sampling shall occur at the maximum heat duty that can be reasonably achieved during sampling. During sampling for SO_2, the sulfur content of the fuel shall be monitored.

(3) For the shared thermal oxidizers:

(a) Sampling to determine compliance with Special Condition 46.A(2) shall occur when the thermal oxidizer receives a nitrogen-rich vent gas stream during purging of a polyethylene unit reactor for a grade transition or shutdown.

(b) Sampling to determine compliance with Special Condition 46.A(1) shall occur at any time that the Olefins plant is in operation.

(c) Sampling referred to in subsections (a) and (b) may consist of a single test, if the relevant conditions for each test are satisfied.

(4) For the MEG thermal oxidizers:

(a) Sampling to determine compliance with Special Condition 46.B(2) shall occur when the Glycol plant is in operation, and the glycol purge vent stream is redirected to the MEG Elevated flare.

(b) Sampling to determine compliance with Special Condition 46.B(1) shall occur when the Glycol plant is in operation and the glycol purge vent stream is routed to the thermal oxidizer.

(c) Sampling referred to in subsections (a) and (b) may consist of a single test, if the relevant conditions for each test are satisfied.

(5) For each pellet dryer vent, sampling shall occur during production of a resin expected to have the maximum total residual VOC content, at the maximum achievable production rate for the unit. A sample of the resin being produced during the stack test shall be collected and analyzed using the methods referred to in Special Condition 13.C.

(6) For the wastewater treatment plant catalytic oxidizer, sampling shall occur when the Equalization Tanks are receiving influent wastewater.

Continuous Demonstration of Compliance

63. The permit holder shall install and operate a fuel flow meter to measure the gas fuel usage for each device listed in Special Condition 65. The monitored data shall be reduced to an hourly average flow rate at least once every day, using a minimum of four equally-spaced data points from

each one-hour period. Each monitoring device shall be calibrated at a frequency in accordance with the manufacturer's specifications or at least annually, whichever is more frequent, and shall be accurate to within 5 percent. In lieu of monitoring fuel flow, the permit holder may monitor stack exhaust flow using the flow monitoring specifications of 40 CFR Part 60, Appendix B, Performance Specification 6 or 40 CFR Part 75, Appendix A.

64. The permit holder shall install and operate an analyzer which continuously monitors the heat content of fuel supplied to each combustion unit and the shared thermal oxidizers. For combustion devices which receive fuel from a common fuel gas header, a single analyzer may be installed in the fuel gas header.

65. CEMS shall be installed and operated as follows for equipment covered by the permit. Special Condition 23.C specifies acceptable alternatives to installation of an NH_3 CEMS.

EPN	Source Name	CEMS required for pollutant (indicated by X)			
		O_2	CO	NO_X	NH_3
O_FAF01	Pyrolysis Furnace A	X	X	X	X
O_FBF01	Pyrolysis Furnace B	X	X	X	X
O_FCF01	Pyrolysis Furnace C	X	X	X	X
O_FDF01	Pyrolysis Furnace D	X	X	X	X
O_FEF01	Pyrolysis Furnace E	X	X	X	X
O_FFF01	Pyrolysis Furnace F	X	X	X	X
O_FGF01	Pyrolysis Furnace G	X	X	X	X
O_FHF01	Pyrolysis Furnace H	X	X	X	X
USSG01A	Utilities Boiler A	X	X	X	X
USSG01B	Utilities Boiler B	X	X	X	X
USSG01C	Utilities Boiler C	X	X	X	X
UFF01A	Shared Thermal Oxidizer A	X	X	X	
UFF01B	Shared Thermal Oxidizer B	X	X	X	

66. Each CEMS required under this permit shall satisfy the following requirements.

A. The CEMS shall meet the design and performance specifications, pass the field tests, and meet the installation requirements and the data analysis and reporting requirements specified in the applicable Performance Specification Nos. 1 through 9, 40 CFR Part 60, Appendix B. If there are no applicable performance specifications in 40 CFR Part 60, Appendix B, contact the TCEQ Office of Air, Air Permits Division for requirements to be met.

B. Subparagraph (1) below applies to sources subject to the quality-assurance requirements of 40 CFR Part 60, Appendix F; and Subparagraph (2) applies to all other sources. Subparagraph (3) applies to all sources:

(1) The permit holder shall assure that the CEMS meets the applicable quality-assurance requirements specified in 40 CFR Part 60, Appendix F, Procedure 1. Relative accuracy exceedances, as specified in 40 CFR Part 60, Appendix F, § 5.2.3 and any CEMS downtime shall be reported to the appropriate TCEQ Regional Manager, and necessary corrective action shall be taken. Supplemental stack concentration measurements may be required at the discretion of the appropriate TCEQ Regional Manager.

(2) Unless Appendix F is otherwise required by NSPS, state law or regulation, or permit or approval, in lieu of the requirements of 40 CFR Part 60 Appendix F 5.1.1, 5.1.3, and 5.1.4, the permit holder may conduct:

(a) either a Relative Accuracy Audit (RAA) or a Relative Accuracy Test Audit (RATA) once every three (3) years; and

(b) a Cylinder Gas Audit (CGA) each calendar quarter in which the RAA or RATA is not performed.

(3) The system shall be zeroed and spanned daily, and corrective action taken when the 24-hour span drift exceeds two times the amounts specified in the applicable Performance Specification Nos. 1 through 9, 40 CFR Part 60, Appendix B, or as specified by the TCEQ if not specified in Appendix B. Zero and span is not required on weekends and plant holidays if instrument technicians are not normally scheduled on those days.

Each monitor shall be quality-assured at least quarterly using Cylinder Gas Audits (CGA) in accordance with 40 CFR Part 60, Appendix F, Procedure 1, Section 5.1.2, with the following exception: a relative accuracy test audit (RATA) is not required once every four quarters (i.e., four successive quarterly CGA may be conducted). An equivalent quality-assurance method approved by the TCEQ may also be used. Successive quarterly audits shall occur no closer than two months.

All CGA exceedances of ±15 percent accuracy indicate that the CEMS is out of control.

C. The monitoring data shall be reduced to (averaging period) average concentrations at least once every day, using a minimum of four equally-spaced data points from each one-hour period. The individual average concentrations shall be reduced to units of ppmvd, lb/MMBtu, and/or lb/hr, as applicable at least once every week as follows:

(1) The measured 1-hr average concentration (in units of ppmvd) from the CEMS shall be converted to a dry basis and corrected to the reference oxygen concentration.

(2) The converted concentration, corrected for oxygen, shall be converted to an emissions factor (in units of lb/MMBtu) by using an appropriate F-factor determined as specified in EPA Method 19, Equation 19-13, determined using the measured hydrogen content of the fuel gas.

(3) The emission rate (in units of lb/hr) shall be determined by multiplying the emission factor by the fuel flow rate and fuel heat content measured as required under Special Conditions 63–64.

(4) In case the permit holder elects to monitor stack exhaust flow as provided for in Special Condition 63, the emission rate (in units of lb/hr) shall be determined by multiplying the measured concentration (converted and corrected as needed) by the exhaust flow rate; and the emission factor (in units of lb/MMBtu) shall be determined by dividing the emission rate by the monitored fuel flow rate, using fuel flow rate and fuel heat content data measured as required under Special Conditions 63–64.

A CEMS may be shared between two stacks if it is capable of generating quality-assured data at the frequency required by this Special Condition for each stack.

D. All monitoring data and quality-assurance data shall be maintained by the source. The data from the CEMS may, at the discretion of the TCEQ, be used to determine compliance with the conditions of this permit.

E. The appropriate TCEQ Regional Office shall be notified at least 30 days prior to any required RATA in order to provide them the opportunity to observe the testing.

F. Quality-assured (or valid) data must be generated when the source generating air emissions is operating except during the performance of a daily zero and span check. Loss of valid

data due to periods of monitor break down, out-of-control operation (producing inaccurate data), repair, maintenance, or calibration may be exempted provided it does not exceed 5 percent of the time (in minutes) that the source operated over the previous rolling 12-month period. The measurements missed shall be estimated using engineering judgment and the methods used recorded. Options to increase system reliability to an acceptable value, including a redundant CEMS, may be required by the TCEQ Regional Manager.

Recordkeeping

67. The records retention period specified under General Condition 7 shall be extended to five years.

68. Reserved.

Miscellaneous Provisions

69. Prior to the start of operations of the facilities covered by this permit, the permit holder shall submit a permit alteration or permit amendment application which updates the permit representations and these Special Conditions as follows: **(06/20)**

A. Individual emission limitations shall be specified for the storage tanks and sumps covered by the permit.

B. Individual emission limitations shall be specified for the emergency-use diesel engines covered by the permit.

C. A revised TCEQ Table 7 shall be submitted which reflects that as-built design of each storage tank, if the design differs from that specified in the permit application (form PI-1 dated April 17, 2017, as revised).

D. The as-installed maximum power rating for each engine shall be specified, if the engine design differs from that specified in the permit application (form PI 1 dated April 17, 2017, as revised).

E. The as-installed design firing rate for each boiler and each pyrolysis furnace shall be specified, if such design differs from that specified in the permit application (form PI-1 dated April 17, 2017, as revised).

Date: June 26, 2020